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Ice Fishing for Largemouth Bass

page 41

Pennsylvania ANGLER & BOATER

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and more!

The Keystone State's Official Fishing and Boating Magazine

www.fish.state.pa.us

PROTECT • CONSERVE • ENHANCE

RESOURCE FIRST

Education: A Key to the Future

For this, the first "Protect, Conserve, Enhance" column of the new century and the new millennium, I want to focus on the future. The Fish & Boat Commission has many future-looking programs, and our strategic planning efforts, as well as those to attract adequate funding for our infrastructure and program needs, represent our commitment to a bright future for fishing and boating in Pennsylvania. From a long-term perspective, our education programs hold a key to the future of quality fishing, aquatic resource conservation and safe boating.

The Fish & Boat Commission has always been a leader in the number and quality of education programs offered to the public. Subject areas for formal courses range from boating safety to teacher workshops. All courses are taught by Fish & Boat Commission employees or certified volunteers.

The Commission has two distinct subject areas that generally apply to all its education programs: Boating safety and aquatic resource education.

Our boating safety education programs lead the nation in course variety and content. Students who successfully complete Commission boating courses receive a Boating Safety Education Certificate issued by the Commission. All courses meet the mandatory education standards for motorboat operation set by the National Association of State Boating Law Administrators.

The Commission's "core" boating safety course is an 8-hour lesson called "PA Basic Boating." Although this video-driven classroom course (and test) was designed for recreational powerboaters, anyone interested in boating or boating safety can take this popular course. Boaters who operate Jet Skis®, Sea Doos®, Wave Runners®, Tiger Sharks® or other personal watercraft (PWC) have the opportunity to take the PA PWC Course or the Boating Safety Education Certificate Examination (PWC Equivalency Exam). The PWC Equivalency Exam is a one-hour course followed by a comprehensive 50-question test.

The Commission's Boating and Water Safety Awareness Course is very popular with schools and summer camps. The most unusual "boating" courses the Commission offers are those devoted to water rescue. The Commission trains instructors in water rescue and emergency response, emergency boat operation, line systems rescue and ice rescue.

In 1999, Commission staff and instructors certified and trained more than 28,000 boaters and emergency response personnel. With the incentive of our new mandatory education requirements for personal watercraft operators, we issued more boating safety education certificates in 1999 than ever before. I can say without qualification that the Commission's boating education courses help save lives and promote the safe and courteous operation of boats.

Our aquatic resource education programs fall under the broad umbrella of the "KARE" program. The Keystone Aquatic Resource Education program has three main components that provide information about aquatic resources and fishing skills.

In this issue of *Pennsylvania Angler & Boater*, you will find the Pennsylvania League of Angling Youth (PLAY) quarterly newsletter. Designed for children in grades four through six, the newsletter is packed with activities and articles to enhance a child's fishing skills, boating knowledge, safety and outdoor manners.

The second component of the KARE program is the Fishing Skills Instructor Workshops. In these workshops, the Commission certifies park staff, youth group leaders and other interested persons to teach fishing with a safe, ethical and conservation-oriented approach.

And third, designed specifically for educators, the 15-hour KARE Teacher Workshops provide activities and ideas to enhance science, language arts, physical education and social studies classes. Teachers receive three activity books and resource materials to use in their classrooms.

Also, as part of the KARE program, the Commission supports teachers and others who work with youth or adults with an Education Resource Catalog. PLAY activity sheets, SMART Angler pages and selected articles found among the pages of *PA&B* are available in quantity. Educators have access to our library of educational videos, which vary in subjects from fishing and boating to critters and conservation. To receive a copy of this helpful catalog, visit the Commission's website at www.fish.state.pa.us or call us at (717) 657-4521.

These educational programs are supported by you, the Commonwealth's anglers and boaters, with your purchase of fishing licenses, boat registrations and related equipment. When you take advantage of our education programs, you can improve your skills as a boater and enhance your knowledge of fishing, conservation and boating. Be sure to participate in the wide variety of educational programs offered by the Commission and encourage your friends to do so. By increasing awareness of our Commonwealth's outstanding water resources and our fishing and boating opportunities, we focus on the future and help forge the link between conservation and recreation that is the foundation of protecting, conserving and enhancing our water resources for future generations of Pennsylvanians.

Peter A. Colangelo
Executive Director
Pennsylvania Fish & Boat Commission

Commission Update

Three New Major Regulations

For Pennsylvania anglers and boaters, the year 2000 brings with it more than just a change of dates. Three new major regulations go into place this year, including a change to the creel limit for trout, sweeping changes to the bass season structure, and a new safety education requirement for the operators of specialty boats known as personal watercraft.

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Trout creel limit

The regular-season daily creel limit for trout is now five. The new limit replaces the previous daily limit of eight, which had been in place since 1952. The regulation change applies to inland waters and only during the regular season–the first Saturday after April 11 through midnight Labor Day. The daily limit will remain at three during the extended season, which runs from midnight Labor Day through the end of February on most stocked trout waters. The limit change also does not apply to waters managed under special regulations, the Conowingo Reservoir, the Delaware River, or Lake Erie and its tributaries.

There was strong public support for the new creel limit, with some 60 percent advocating a reduction from the previous limit. That public support was a crucial deciding factor for Commissioners, because the measure is based on social and policy perceptions instead of a distinct fisheries management need. The new limit will not result in dramatic effects either on stocked or wild trout populations. Nor will a reduction guarantee that the catch rate is spread among more anglers; on-the-stream creel surveys in Pennsylvania have shown that 90 percent of anglers already creel five or fewer trout. However, implementation of the reduced limit does reflect the modern emphasis on fishing primarily for recreational purposes, instead of fishing solely for consumption.

Bass regulations

Thanks to new rules, the state's anglers now have the opportunity to fish for bass year-round. Starting this spring, anglers will be allowed to fish for bass on a catch-and-immediate-release basis. Tournaments will be prohibited at that time. Anglers can then harvest some bass in the summer, much as they may under the traditional "open season" regulations. But harvest will be limited through the fall and winter. Tournaments will be allowed during both the traditional summer season and fall and winter.

In addition, the new structure will regulate the bass fisheries in rivers and streams–which contain mostly smallmouth bass–differently from the lakes and ponds that are the preferred domain of largemouth bass. By regulating lakes and streams differently, fisheries managers can address the difference in fish harvest during the winter, when ice fishing is popular.

The intent is to maximize fishing opportunities by allowing angling throughout the entire year, while affording bass populations adequate protection from increased fishing pressure. Reducing harvest in the fall would give bass increased protection during a traditionally vulnerable period, thus offsetting any incidental losses that might result from catch-and-immediate-release fishing during the spring spawning period. To mitigate any losses even more, a springtime prohibition on anglers repeatedly casting into a clearly visible bass spawning nest, or redd, in an effort to catch or take bass has also been established.

Personal watercraft

photo-Art Michaels

A major regulation comes into effect during 2000 for the operators of personal watercraft (PWC). PWC are specialized boats often better known by brand names such as Jet Ski®, SeaDoo® and Wave Runner®. Beginning this year, PWC operators must carry a Boating Safety Education Certificate with them on the water. The Commission issues the certificates to individuals who successfully complete an approved boating safety course or examination.

A list of courses and examinations meeting this requirement is available on the Commission's web site at www.fish.state.pa.us or by calling **1-888-PAFISH-1 (1-888-723-4741).**

Even though PWC currently make up less than 7 percent of the nearly 350,000 boats registered in Pennsylvania, they are involved in a disproportionate number of boating accidents. In 1998, 36 percent of all reported boating accidents involved at least one PWC, and 56 percent of all boating collisions involved at least one PWC. Commission analysis shows that these accidents are usually caused by operators not keeping a proper lookout, operating the boat in a reckless manner or disobeying basic safety regulations. An educated boater is often a safer boater, and the Commission believes the certification requirement will help address both safety concerns and complaints often voiced by others who recreate on the water.–*Dan Tredinnick.*

Casting Around

Conserve 2000, Water Trails

The Commission's Conserve 2000 program lets anglers, boaters and other conservation-minded people join the Commission in working to protect our state's aquatic resources. One vital aspect of the Conserve 2000 program is that anglers, boaters and conservationists take action. That makes Conserve 2000 purposeful.

To help and encourage readers to understand Conserve 2000 and give the program meaning, we're covering six major Conserve 2000 topics in feature articles in *PA&B*'s six year-2000 issues. Each subject mirrors the three zeros in the Conserve 2000 logo: The first, the global, general concerns of the topic; the second, the regional aspects of the subject; and the third, the local parts of the subject, those that call readers to action. So during the year 2000 you'll be able to read more about Conserve 2000 and specifically how the program can benefit you and our aquatic resources.

Here are the article topics we'll cover during the year:

- Nongame and threatened and endangered reptiles and amphibians.
- Resource protection.
- Habitat loss.
- Recreational access.
- Nongame and threatened and endangered fishes.
- Migratory fishes.

CONSERVE 2000
PROTECT PENNSYLVANIA'S WATERS

The first article in this series, written by Commission Aquatic Resources Program Specialist Laurel Garlicki, explains some of the concerns about Pennsylvania's nongame and threatened and endangered reptiles and amphibians. The midland painted turtle on this issue's front cover, photographed by Andrew L. Shiels, represents nongame species and their specific habitat requirements. About 75 percent of the Commonwealth's fish, reptiles and amphibians are "nongame." There is much work to be done to ensure their long-term conservation. Conserve 2000 funds will help with the protection, conservation and restoration of these important species and their habitats.

Also in this issue on page 45 is the first in a series of articles on the Commission's Water Trails Program. Water trails are much like the more familiar land-based trails, except in this case you follow the trail via boat, instead of hiking or riding a bike or horse. Water trails provide opportunities for fishing, wildlife watching, enjoying the scenery, learning about the history of a waterway and the surrounding area, and just plain leisurely motoring or paddling down a waterway.

In addition to designating projects for inclusion in the official state Water Trails Program, the Commission provides support and technical assistance for water trail partners. Along these lines, we're publishing articles with maps about each water trail. The first in this series is the Juniata River Raystown Branch Water Trail. The other water trails we'll cover in year 2000 issues include Swatara Creek, Lehigh River, Allegheny River, Schuylkill River and the Susquehanna River.–*Art Michaels.*

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The Keystone State's Official Fishing and Boating Magazine

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About the cover

This issue's front cover is a midland painted turtle, photographed by Andrew L. Shiels. The midland painted turtle is the subject of the Commission's year 2000 nongame species patch. Check it out on page 40. This issue's center pages are a poster on all of Pennsylvania's turtle species. Remove the poster carefully from the center of the magazine and hang it up!

with soy based inks

MAIL

Hellbender

In late June 1999, I was fishing Pine Creek about 200 yards down from where Cedar Run comes in. As I was walking along the cliff side of the creek, I looked down and to my surprise I spotted a hellbender that was 20 to 22 inches long. As soon as I noticed it, I knew what it was because I remember seeing an article in your September/October 1997 issue about hellbenders by Karl Blankenship ("Some Pennsylvania Streams Are a Hellbender's Heaven").

I carefully picked it up and noticed a sore on the side of its face about a half-inch in diameter just above the mouth. I thought it was caused by its searching for food–the sore resembled the scars that trout get when digging for nymphs. I took some pictures and then put it back in the water and watched it slowly crawl away.

When I arrived home from my vacation, I searched for the magazine to read the article. I was amazed that the article said that hellbenders come out only at night and are found under rocks. In this situation things were a little different. I found the hellbender late in the afternoon in about five inches of water, curled up next to a little ledge.

I also read in the article that hellbenders feed on crayfish and other insects. While fishing that section of Pine Creek, I noticed an abundance of crayfish, so there was plenty of food. I was wondering if the scar was the reason for its being out in the open during the day. Or could it be that a few miles upstream in Blackwell, Babb Creek, which is polluted with mine acid, enters Pine Creek?–*Frank Costello Limerick, PA.*

It is difficult for me to identify the cause of the hellbender's condition without examining the animal. However, I suspect that the sore could have resulted from a fish hook. As a normally nocturnal species, this salamander is rarely seen by humans. Usually, hellbender/human interaction results after a hellbender has taken an angler's live bait. Depending on the person, a whole range of emotions including fear, concern and amazement may arise. Those who are fearful may just cut the line to rid themselves of the prehistoric creature on their line.

In normal conditions, hellbenders are well-hidden under large rocks and boulders during daylight. They consume small fish and invertebrates, but they definitely prefer crayfish. Hellbenders thrive in cool or cold-water streams. They are found less often in larger rivers.

Acid mine drainage, particularly in northcentral Pennsylvania, has eliminated hundreds of miles of hellbender habitat. Because of adverse water chemistry, hellbenders avoid areas of acid mine drainage, so it is unlikely that this particular individual was affected by the drainage of Babb Creek into Pine Creek. The above-average water temperatures that many PA waters experienced last summer because of a prolonged drought could have allowed the severity of injuries or infections to increase. Healthy hellbenders are secretive and typically nocturnal. Except for the sick individual you saw that was "acting out of character," chances are high that you'll never see a hellbender in the wild during daylight.–***Andrew L. Shiels, Nongame and Endangered Species Unit.***

Catfish article

"Fishing Patterns for Flathead and Channel Catfish," by Mike Bleech, in the July/August 1999 issue, was a good article. There are many catfish anglers out here who don't have computers to respond by e-mail and many who don't subscribe to *PA&B* (but who should) who would agree with this article and who would agree that it was well-written covering all the critical "need-to-know" details.

Thanks for covering this subject and giving some "space" to the sport of catfishing.–*R. Barker, Oxford, PA.*

Research tool

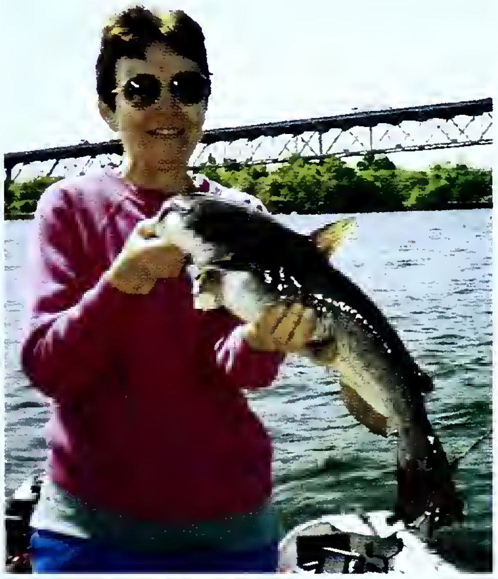
Enclosed is my payment for a subscription to *PA&B* for three years. I have been a subscriber to the *Angler* for a long, long time (maybe 50 years). Currently I have in my home library 10 years of the *Angler*, 1990 to 1999. Many more years of back issues are stored in the attic of my second home, at the Jersey shore. I keep the *Angler* on file as a research tool. When I get news of a fly that is hot or that should be in my fly box, I go to the index in the back issues for an article on that fly.

My fishing career started in the early 1940s on the Wissahickon Creek in Fairmont Park in Philadelphia and on the Schuylkill River (then totally polluted with coal dust from upstate mines) in Philadelphia. So I have seen a great deal of improvement in Pennsylvania's streams and rivers.

I consider *PA&B* to be a premier periodical always in the lead promoting conservation and sensible angling and boating. We in Pennsylvania are fortunate to have people whose careers are dedicated to preserving and fostering resources that so many take for granted or cast aside as valueless in their own selfish pursuit for gain.–*John Jungers, Elkins Park, PA.*

Catfish state record?

I was fishing in the Delaware River in Philadelphia last May and caught a channel catfish 26 1/2 inches long and 6 1/4 pounds, and also a bullhead catfish that same day measuring 22 inches long and weighing 5 3/4 pounds. I threw both fish back. I was not aware that the bullhead was a state-record fish. I thought it might be of interest to you for your magazine.–*Eileen Kicinski, Philadelphia.*



White catfish

Channel catfish

Congratulations on a very successful catfish trip in the Delaware estuary and thank you for providing us with photos of your catch, including the possible state record brown bullhead that you released.

Even though the channel catfish was the larger of the two catfish in the photos, I was actually more impressed with the fish that you identified as the bullhead. Unfortunately, this was not a brown bullhead or a state record; instead, it was a very fine specimen of a white catfish, which was only 0.75 inches short of the longest white catfish that I have ever seen in 19 years of fisheries surveys in southeastern Pennsylvania. I would have been quite pleased by catching that fish.

Your identification error was one that is quite common among anglers, because many anglers are unaware that white catfish even exist, let alone know that they are fairly common in eastern Pennsylvania rivers and some eastern lakes. The shallowly forked tail on the white catfish was the dead giveaway in your photo that separated it from a brown bullhead, which has a square tail. Also, brown bullheads have a much more brown pigment on the dorsal side than white catfish, which tend to be gray to gray-black on the dorsal side, but may occasionally show some brown color. White catfish adults have very large heads for their length and all ages of white catfish display pure-white barbels (whiskers) as opposed to mottled barbels beneath the lower jaw. If it's any consolation, I was introduced to white catfish as being bullheads when as a child I was first taught to fish along the banks of the Susquehanna River. Along the Schuylkill River, some anglers refer to white catfish as blue catfish, another local misnomer.

Thank you for enclosing the photos of your catch. The quality of the white catfish photo left no doubt about the fish's identification. Good luck in your future fishing trips on the Delaware estuary–its catfish population is outstanding.–*Michael Kaufmann, Area 6 Fisheries Manager.*

Editor's Note: Please remember to wear your life jacket aboard your boat.

Nockamixon

Concerning the article about Lake Nockamixon in the January/February 1999 issue, I found Mr. Attardo's article very accurate. I also gave a wholehearted "amen" when I read his comment about assuming that a hair jig on the rocks should have produced a smallmouth bass. The only thing I have to say to that is, "Welcome back to Lake Nockamixon." The lake's diversity can work against you at times. At best, Lake Nockamixon could produce enough fish to feed an army battalion for a month. But go back the next day and in frustration you might throw your rod in the water and wish you never started fishing.

I will let you in on a secret about the lake. Depending on how well they settle in, watch for good tiger musky action in the future. The lake was stocked three years straight (1995-1997) with tiger muskies, and they certainly have plenty of food! Lake Nockamixon–diverse and loving it.–*Joshua S. Roeder, Quakertown.*

Canadohta Lake

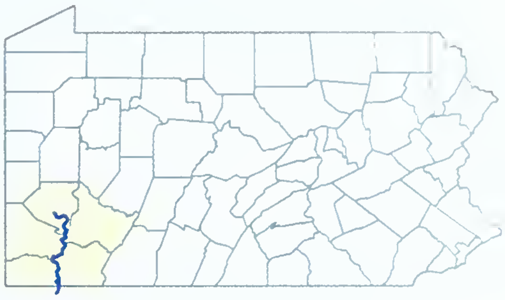
This letter is to thank you for the fine job that the Fish & Boat Commission has done at Canadohta Lake (Crawford County) this year. We have owned a cottage there for eight years and the fishing this year has been extraordinary. I know that you have moved a lot of fish from Tamarack Lake, which was drained, and perhaps that's where all the bass and panfish came from. I don't think we've seen in previous years as many of those types of fish.

It's fun, as well as encouraging, for 3-, 4- and 6-year old boys to catch fish. On one occasion, my 6-year-old son made three casts and subsequently caught a walleye, a perch and a bluegill. He then had to take a rest because he was "tired." On another evening, my wife, the three boys and I took our boat to our "hotspot." After baiting hooks, helping cast, releasing eight different fish and rebaiting hooks again and again, it was 40 minutes before I even got my own line wet.–*David J. Anselm, Wexford.*

Monongahela River Sauger Fishing

by Jeff Knapp

Once considered an aquatic wasteland, the Monogahela River is continuing a trend of improvement that began nearly three decades ago. Today the Mon provides a fishery for several gamefish species. The sauger furnishes perhaps the highest-quality sport.



The Mon River is formed by the convergence of the Tygart River and West Fork River in Fairmont, West Virginia. Flowing north, it enters Pennsylvania near Point Marion and continues a 90-mile northerly venture that leads to Pittsburgh. Along this route, six lock-and-dam systems impound the Mon, elevating it to a depth at which commercial barge traffic is possible.

According to Commission Area 8 Fisheries Manager Rick Lorson, the major turning points for the Mon occurred back in 1972, first with the passage of the federal Clean Water Act, and then at the Tri-State Environmental Symposium held in Pittsburgh. This symposium was attended by involved state and federal resource agencies and private-citizen groups, with the subject of how best to improve the water quality in the Three Rivers area. Over the nearly 30 years that have passed since that symposium, the water quality has greatly improved, thus providing a similar growth in the diversity of the Mon's fish life.

Lorson's Area 8 fisheries management team recently filed a report on the Mon's water quality:

"The improvement in water quality has been the result of sewage treatment facility upgrades, regulation and reduction of industrial activities, increased regulation and reclamation of acid mine discharges, and improvements in other water quality protection techniques. Although dramatic improvements have been accomplished, the Monongahela River remains the most industrialized and degraded of the three rivers near Pittsburgh."

Good news could be on the horizon regarding the Cheat River, which enters the Mon at Point Marion. Extensive work is currently underway in the Cheat River watershed, which lies almost entirely in West Virginia. According to West Virginia Division of Natural Resources Fisheries Biologist Frank Jernejcic, liming in mine acid-influenced tributaries of the Cheat River upriver of Cheat Lake could be having a beneficial effect on the watershed. Jernejcic said that though chemical analyses don't yet show any significant improvement, Cheat Lake's largemouth bass fishery has come on strong in recent years–one of the top in West Virginia. Anything done to improve the quality of the Cheat River drainage has to benefit the Pennsylvania portion of the Mon. Unfortunately, additional sources of acid mine drainage enter the Cheat River below the lake, before its merger with the Mon.

As the Fish and Boat Commission report points out, the Mon lags behind the Allegheny and Ohio rivers in terms of water quality and the overall fishery it provides. But recent Commission surveys indicate that, interestingly enough, the sauger fishery is as good as or better than that of the other two rivers.

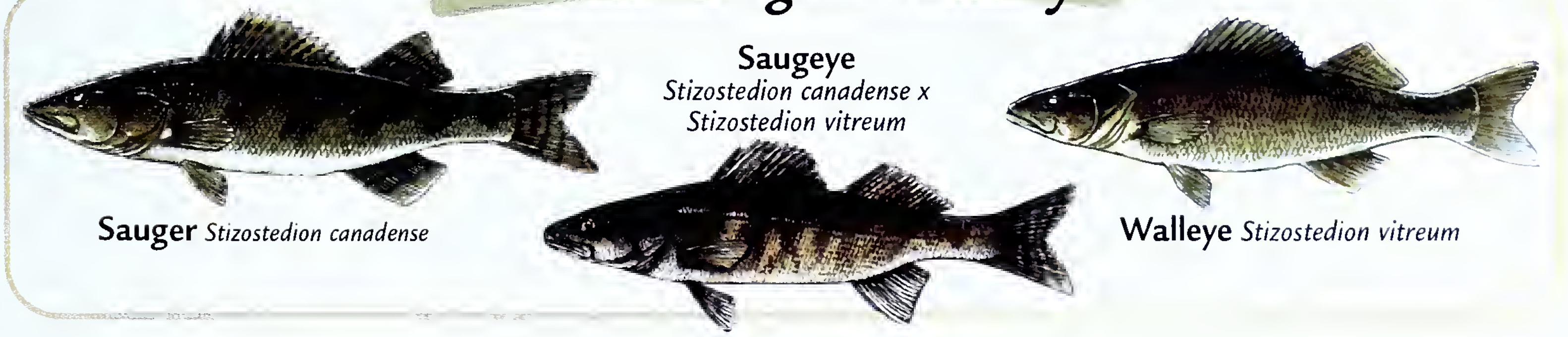
"The Monogahela has a very good sauger fishery," reported Lorson. "There are also good numbers of large saugers." The biologist noted that more large saugers have turned up in surveys than in either the Ohio or Allegheny rivers.

Subtle differences

Understanding why the Mon shines in terms of sauger production calls for an understanding of the fish itself. Native to the Ohio River drainage, the sauger, like the walleye, is a member of the perch family and has a quite similar look. Distinctions between the two are subtle, but become obvious once you've seen a few of each fish.

Saugers have a more mottled appearance, with bars often extending below the lateral line of the fish. The dark blotch present on the walleye on the rear of the spined dorsal fin does not exist on the sauger. Also, the white tip on the lower fin of the tail, which is distinct on the walleye, is present on the sauger, but much more subtle and usually fringed with an orange or copper color. How vivid the markings of a sauger are depend on the color of the water from which it was caught. During muddy conditions these

Know Your Sauger and Walleye



Sauger *Stizostedion canadense*

Saugeye *Stizostedion canadense x Stizostedion vitreum*

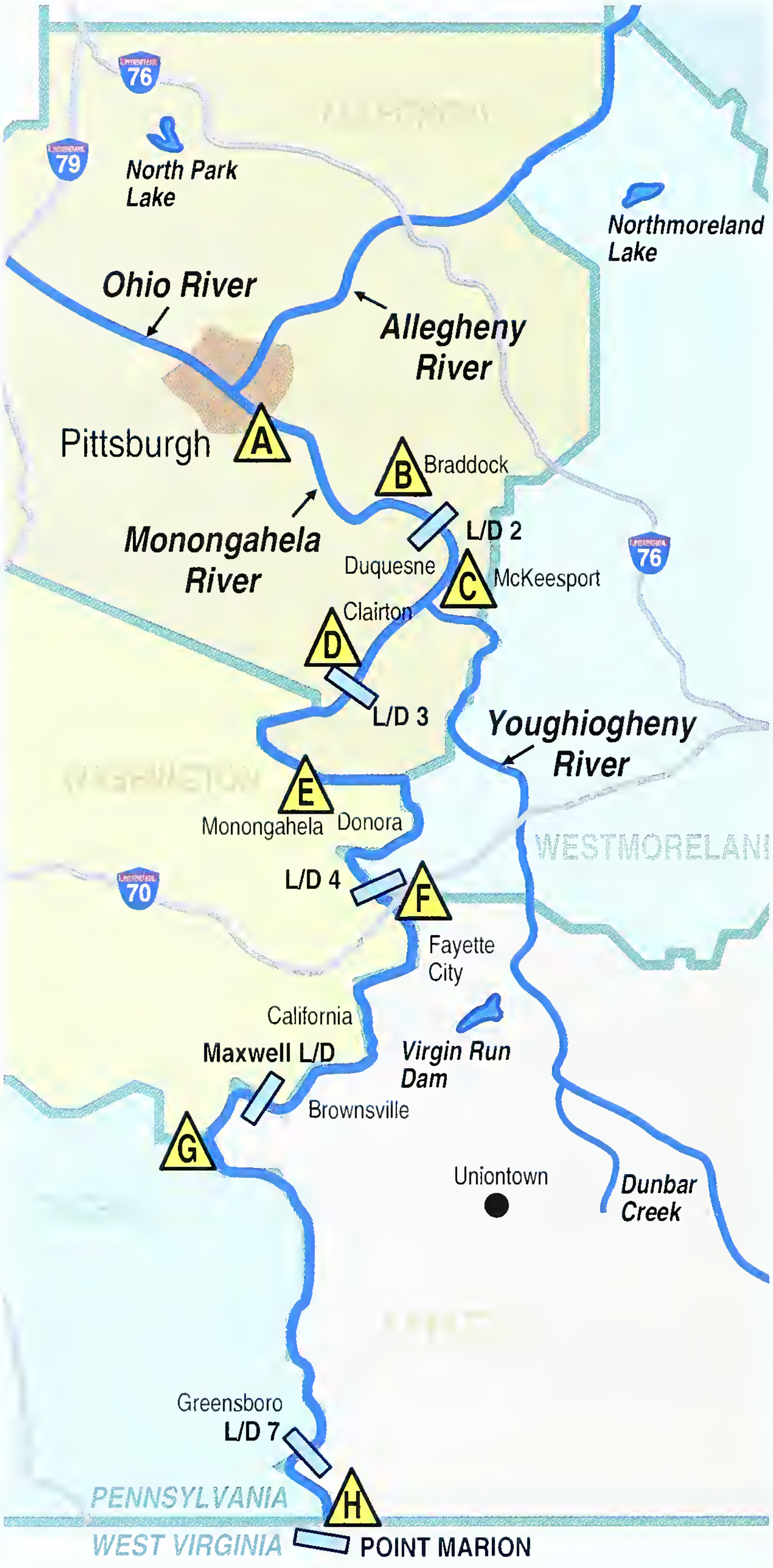
Walleye *Stizostedion vitreum*

photo-Jeff Knapp, illustration-Ted Walke

markings tend to wash out.

It's also worth noting that all of the saugers in the Mon, or any of the three rivers for that matter, are wild fish. The density of the population relies completely on natural reproduction, the success of which varies greatly from year to year. Conditions during and shortly after the spawning period, which normally occurs in early to mid-April, have a strong influence on spawning success. High water and abnormally cold water can spell trouble for a year-class. During springs of warm, stable weather, strong year-classes are usually produced. Saugers grow quickly, and, given a good forage base, (gizzard shad in the case of the Mon River) can quickly grow into the 12-inch size range. Biologists have documented saugers reaching this size range in less than two years, so a strong year-class can quickly translate into excellent fishing. The bad news is that fast-growing fish tend to have a high degree of natural mortality–they die of "old age" quite early. A sauger much over 15 inches would have to be considered a big one in Pennsylvania. Having fished the three rivers during the prime times for about a dozen years, the biggest saugers I have taken have been in the 18-inch range.

Other differences between the walleye and sauger concern the environments each prefers. Walleyes like clearer water. Saugers do better in more turbid conditions, which helps explain why they do well in the Mon.



A = Southside Access (City of Pittsburgh)
B = Braddock Access
C = McKeesport Access (PFBC)
D = Elizabeth Access
E = Monongahela Access (PFBC)
F = Speer Access (PFBC)
G = East Fredericktown Access
H = Point Marion Access (PFBC)

map graphic-Ted Walke

"With its lower gradient, the Mon has longer, more lake-like pools," explained Lorson. "The water tends to be more turbid, and saugers seem to do better there than walleyes."

Besides the slower drop to the river, some of the dams on the Mon are gated, instead of fixed-crest. A gated dam provides a deeper impoundment of the river, which adds to the lake-like effect. Less current is also present. These physical factors tie in to how the river is best fished.

"These factors all come into play on the Mon," said Lorson. "When compared to the other two rivers, there is less habitat, and that means there is less opportunity. The tailrace areas, which are well-oxygenated, provide the best sauger habitat on the river."

There are six lock-and-dam systems on the Mon River between the West Virginia line and Pittsburgh. Starting in Pittsburgh and moving upriver, dams are located in Braddock (Locks & Dam 2), Elizabeth (Locks & Dam 3), Charleroi (Locks & Dam 4), upriver of Brownsville (Maxwell Locks & Dam), Grays Landing (Gray's Landing Locks & Dam), and at Point Marion (Point Marion Lock & Dam).

Other spots worth checking out are the mouths of tributaries. Such places often provide habitat by washing sand or gravel bars out into the river during periods of high water. It's possible that cooler and better oxygenated water is located in some of these spots as well.

Finding saugers

Catching Mon River saugers isn't a complicated affair. The trick is finding them. From late fall into early spring, when the season closes in mid-March, saugers usually school in specific areas. As has been previously mentioned, the better habitat on the Mon lies near the tailrace areas in the upper third or so of the pool. For the boat angler, the immediate tailrace area can be fished only from a point below the downstream end of the approach wall of the lockage. During the warm-weather months, the restricted zone is well-marked with buoys. But at this time of year it's unlikely any buoys will be present. So draw an imaginary line across the river from the lower end of the lock wall, and keep your boat downriver of it.

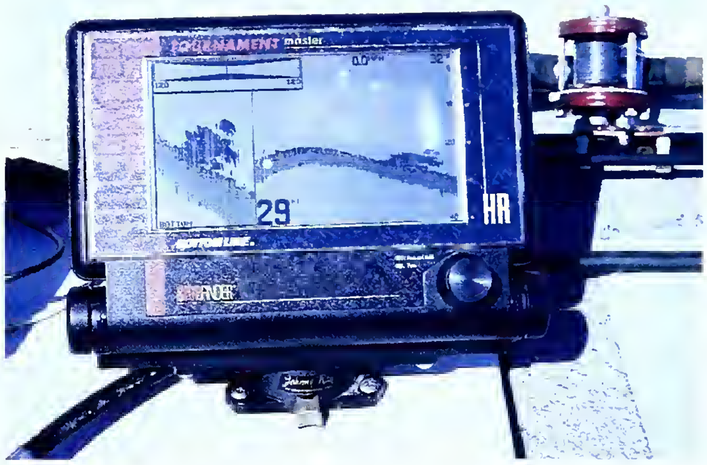

A school of saugers appears on this sonar unit's screen. Saugers school tightly this way from fall through early March. This reading was taken in March 1999. Note that the water temperature is 32 degrees (upper right of screen).

photo-Jeff Knapp

It's been my experience that saugers like to stack up in the slack water areas located just downriver of the lock chambers. On the Mon River, several of the dams have double lock chambers, which create an even more significant current break. Saugers are often visible on the sonar unit in huge schools that can easily be seen on the electronics. When fishing these areas from a boat, however, keep an eye out for oncoming river traffic. The Mon still has a lot of commercial barge use, and you'll want to keep out of the way of these vessels.

Sand and gravel bars washed out into the river from tributary streams create not only a current break, but structure as well. The main basin of the Mon River is quite featureless, and the cover provided by these bars is often that "something different" that attracts and holds fish.

Accurate boat control

When fishing from a boat, the ability to control accurately is a huge benefit. As stated earlier, finding the saugers is the first step, and this means dragging an appropriate presentation through the high-percentage areas outlined. Even though generally not considered a fast "search lure," a jig-n-minnow, when fished from a drifting boat, is an effective bait for searching out fish. The key is to use the boat to make the presentation.

Consider the slack water situation described below a lock chamber. This area can be efficiently searched by lowering a quarter-ounce minnow-tipped jig directly over the side of the boat until it hits the bottom. Drop the trolling motor and ever so slowly begin working downstream. You'll need to let out additional line to compensate for the boat movement. You should be able to keep the angle of the line entering the water at about 45 degrees. Let out just enough line almost to touch the bottom. This can be determined by quickly dropping the rod tip back. If the bait is in the correct position, slack line will form as the jig hits the bottom. With a sensitive rod, and in depths of 15 feet or less, you may be able to feel the jig hit bottom. You don't want to be dragging the lure along with excess line out. Snags will be frequent, and you'll have a tough time distinguishing a sauger hit from a snag.

Once you have a hit or catch a sauger, it's wise to throw out a buoy to mark the spot. By hovering around the buoy, you may be able to catch fish all day long. On all three of the major western Pennsylvania rivers, I've sat on such spots and pulled in saugers, one after another.

This basic downstream drift can be used to search all kinds of slack-water pools. You'll need to make adjustments to allow for the conditions of the day. Just remember that the objective is to present a slowly-moving bait downstream, keeping it just inches off the bottom.

Shore anglers will find it best to concentrate on the mouths of feeder streams, and to fish during the twilight period, when aggressive saugers move shallow to feed.

With favorable river conditions, excellent sauger fishing should be available on the Mon River until the season closes in mid-March. The favorable conditions include steady flows and lack of ice jams. This spring should also be good because of a good minnow population from last summer. This tends to turn on feeding binges in pre-spawn saugers in February and March. The action often holds for the month on May, when the season reopens. After that the fish seem to scatter, and are difficult to locate until the following fall.◻

Monongahela River Access

The Commission and local municipalities maintain several excellent accesses on the Monogahela River.

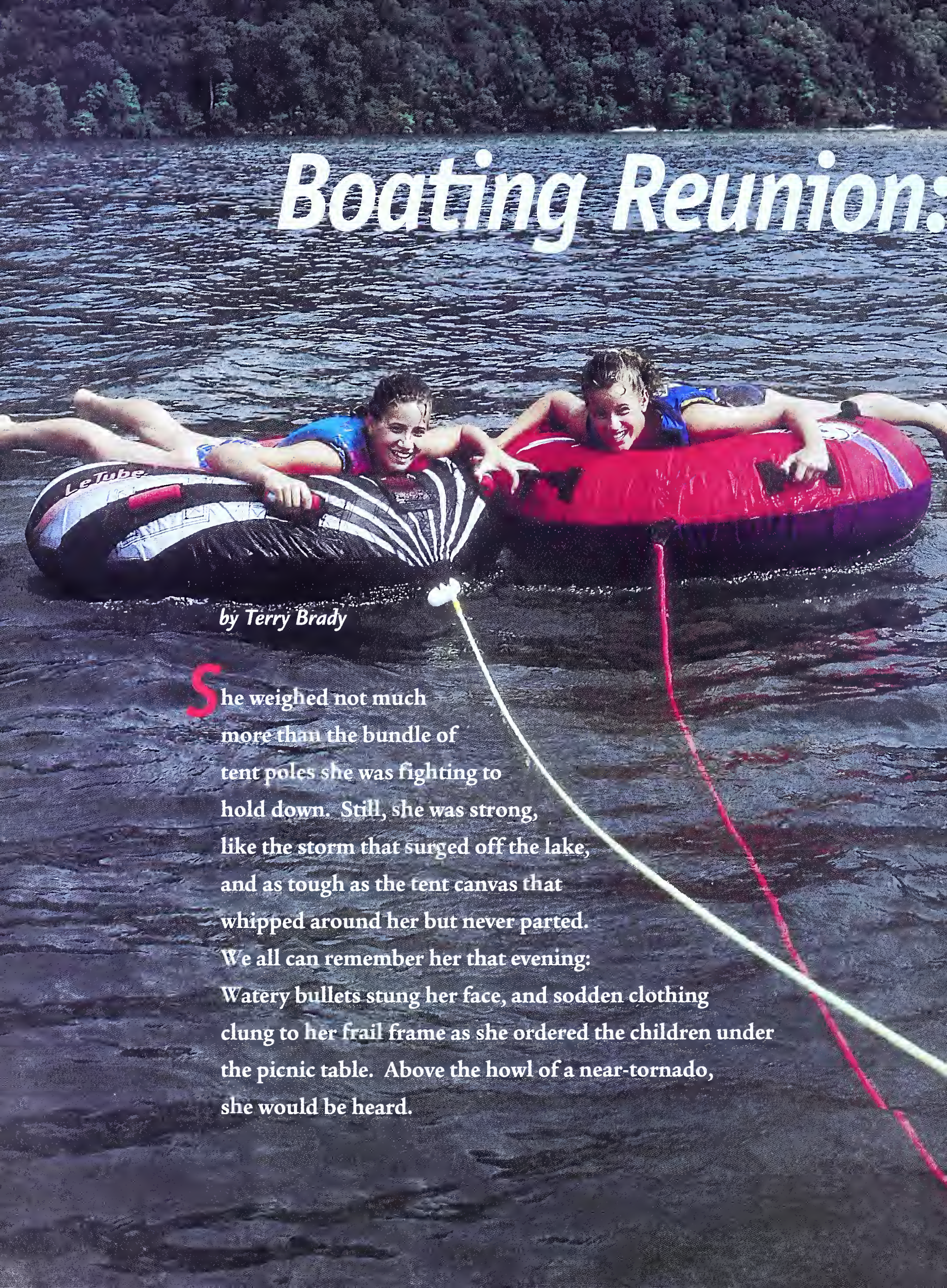
In Allegheny County, a Commission access is in McKeesport, at the mouth of the Youghiogheny River. Other public accesses in Allegheny County include the city of Pittsburgh Southside Launch, and ones found in Braddock and Elizabeth.

Monongahela and Speers are the sites of two Commission accesses in Washington County. Other public ramps can be found in West Brownsville, New Eagle and at the Ten Mile Creek County Park.

In Fayette County, the Commission maintains access areas in Point Marion and East Fredericktown.

To locate additional access areas on the Monogahela River, consult the Commission's book *Guide to Public Fishing Waters and Boating Access*. For ordering information, see the form in this issue, or download and print it from the Commission's web site at www.fish.state.pa.us.

The U.S. Army Corps of Engineers publishes complete river navigational charts of the Mon River. For ordering information contact the Corps at 412-644-6872.–*JK*.



Boating Reunion:

by Terry Brady

She weighed not much more than the bundle of tent poles she was fighting to hold down. Still, she was strong, like the storm that surged off the lake, and as tough as the tent canvas that whipped around her but never parted. We all can remember her that evening: Watery bullets stung her face, and sodden clothing clung to her frail frame as she ordered the children under the picnic table. Above the howl of a near-tornado, she would be heard.

Unsinkable Family Tradition

That summer storm almost 10 years ago left heavy damage in the campgrounds scattered along Lake Raystown's shores, but it did not take our food tent. Catherine "Skip" Ali saw to that. Her family was inside, and she would cling to it until the churning skies calmed.

She was a woman who "even at her age in her 50s and 60s was willing to rough it," her daughter would say, "for the sake of having all the kids here." "Skip" Ali camps with us now only in the scrapbooks of our mind, but her spirit is there from the moment the first tent peg is pounded to the last good-bye is said.

When the boats are moored, the dishes cleaned, and the campfire's flames perform their hypnotic dance, we think often of one woman and one storm. We go back to them for the same reason we return to Raystown summer after summer. For they are the embodiment of what we do, and why we have done it for 15 years.

Family. Its ties stretch across this state from Pittsburgh to Philadelphia, and extend far beyond to Maryland, Ohio, Indiana and Texas. From distant points they come each year for an extended weekend of camping, boating, water sports and fishing. But they come seeking, and finding, so much more at this family reunion.

Before the reunion begins, the families erect tents at adjacent campsites. The reunion started with birthday parties attended by 25 to 30 people. Today, the 15-year tradition includes as many as 67 family members and friends.

At 74, patriarchal camper Frank R. Ali has heard the talk for so long: Family unity is gone, they say, lost in the harried pace of two-income households, the exhaust fumes of jetliners, and the silence of unsaid prayers. On the pristine waters uncoiling through Huntingdon County, Ali likes to think that more than a dozen families found what so many others lost.

"This tradition has lasted so long because our background is very family-oriented, and family comes first, whether it be a cousin, brother or uncle," Ali said. "I was brought up that way and so were every one of our kids and their children. They all had birthday parties and holidays together, 25 to 30 people in a group."

Now, as many as 67 family members and friends have gathered on the shores of Lake Raystown. Ali's parents and his heritage may have defined the path, but a long line of in-laws are eager to follow. With names like Heckel, Connolly and Brady, they're all from diverse backgrounds, all drawn by one thing.

"I have friends who say it's wonderful that we do this. They don't know how we do it," Ali, a Mount Lebanon businessman, said. "But you have to give credit to the in-laws. All are family-oriented and you wouldn't have this if they didn't keep coming back."

If family ties are the bond holding together this tradition for 15 years, then boating is the catalyst that gives it epoxy-like strength. That chemistry first took shape some 40 years ago on the Youghiogheny River, when Ali, his late wife, "Skip," and their wooden runabout introduced five children to the joys of boating.

"I have to say boating is a nucleus of this close family," Ali said. "We skied, fished and picnicked. Every weekend we were boating. We all took to boating and when we were the only ones who had a boat, naturally, the kids were allowed to bring friends."

Some of those "friends" were to become in-laws and loved ones, and the circle of family boating continued to grow. Much water has passed under the bow since those early days at the Yough, and this skipper has seen the changes. He talks about them while looking out on a lake where his grandchildren slalom ski with the best, and perform the slickest maneuvers on kneeboards.

"I never could have imagined they would see such equipment," Ali said on that evening in late July 1998. "We started with skis that were like barrel stays. They were about eight inches wide and six feet long, and very hard to control. Now, the kids have everything: Kneeboards and wakeboards. The kids don't want to even ski anymore. They all are interested in the other."

photo-courtesy of the author

Boating Reunion: Unsinkable Family Tradition

photo-courtesy of the author

Waterskiing and wakeboard and kneeboard activities are as much a part of the reunion as are camping and reminiscing.

But that was not always the case. A few summers back, every camera was clicking aboard the *Proud Mary* as seven of Ali's grandchildren slalomed past the lake tour boat in one waving unit. And jaws still drop when two of his oldest grandchildren barefoot ski when the waters permit.

Their elders may have planted the seed, but it is the kids who keep this rare gathering growing each summer, says Ali's son-in-law, Charles "Chuck" Pasqaurella. Since 1983, he's towed a boat each summer to Raystown from his Upper St. Clair home.

"I think the most unique thing about this gathering is the kids," said the 48-year-old accountant. "This is so important to them, and that probably says why it has gone on for 15 years. The first thing that came out of my daughter, Dana's, mouth when she decided to take summer college classes was, 'How am I going to get to Raystown?'

"The fact that we don't see everyone all the time makes it more special. It's only for a weekend. It's outside, usually during nice weather. It's around water. All these things appeal to us as families. We like to just sit together and just talk about what happened a year ago, or five years ago. And the kids reminisce almost as much as we do."

Extensive travel has put Pasquarella in contact with people from all walks of life. Never has he heard of a gathering as unique as his Raystown family gathering.

"Even when you come up here to the lake," Pasquarella said, "you may see people who are regulars, but they are two or three couples, not 12 couples and 30 kids. It has become a tradition that is important to all the kids, and once it becomes important to them, you don't have to sell them on it."

Even if you did, it would not be hard: Eating and sleeping under the stars, learning and perfecting water sports on as many as five different boats, often seeing relatives for the first time in a year, and sharing notes on some of the funniest moments.

Was it when one uncle barked orders with tent directions in one hand and a fishhook in the other? Or when another uncle's dive from the bow prompted cries of "Shamu! Shamu!"

As soon as they are available, five or six contiguous campsites are reserved. Usually, as many as five boats owned by camping families are trailered to the campsite's nearby launching area.

"The reunion is something that ever since I was a little kid, I could not wait to go to," said veteran camper Charles 'CJ' Pasquarella, 18. "I know there is a lot of work involved in going to Raystown, but it is worth it, and I hope to be able to carry on the tradition with my children."

His favorite memory? "Doing 'seven skiers,' in which my six cousins and I would ski off the back of one boat and the passersby would just stop and watch.

"I love the outdoors and camping, but what really makes this reunion the best are all the boats and water sports that take place during the long weekend."

The kids. Only yesterday they ended their days lakeside by roasting marshmallows at the campfire. Now they seek different sweets at the resort area dance. Yesterday, they launched toy boats into the lake shallows. Today, they take out dad's runabout for an evening cruise.

Pasquarella's wife, Debbie, thinks back to one of the first reunions, back beyond the night her late mom battled the storm:

The evening was tranquil; the last of some 25 little ones was tucked into one of 10 tents; the fire was warm, the conversation, friendly. Quiet time at day's end. And then a neighboring camper entered our circle with a puzzled look on her face and a question on her mind.

"We've been watching you all for two days now, and I have to ask you something. How do you do it? How do you manage to put all these kids to bed so quietly and why are they so well-behaved?"

Whew! And we thought she was going to ask us to keep down the laughter at night. Instead, she was delivering a compliment on what would prove to be the lifeblood of our gathering.

"It's interesting how over the past 15 years things have changed with the children," said Debbie Pasquarella. "First we would have the playpens and what not in our tents, and we'd have all the little high chairs around the picnic tables. And then we would put our kids to bed so we could tell stories. Then we had two campfires and the kids would tell their own stories. Now, the kids don't even stay in the camp area. We sit at the fire and they go to the dance."

Husband Chuck sees other changes:

"I hadn't seen my son 'CJ' on a wakeboard in about a month, and we went out and he's doing these flips and turns like there's nothing to them," Chuck Pasquarella said. "I tried that wakeboard and I can barely stand up on it. I don't know how anyone can flip and land on it."

At the age of 80, Rose Heckel does not know of wakeboards and slalom skis. Talk of boats, motors and trailers is foreign to her. But the Dover resident knows that what she savors each summer near the town of Entriken is very special.

"Being away from so many of the children for much of the year, this gives me a chance to see how they have progressed," said the matriarch of the gathering and sister of Frank Ali. "I look forward to seeing their changes in personality and the different things they now can tell you about college life."

"People can't believe we do this," Heckel said. "Not when you talk about a family this size, and the distances some of us travel to be together, and how everyone makes sure to keep this one weekend free."

The formula for this annual reunion is a simple one: As soon as they are available, five or six contiguous campsites are reserved. An attempt is made to keep all sites as close together as possible. Dinner plans and food allocations are worked out in advance by the families sharing the sites. Usually, as many as five boats owned by camping families are trailered to the campsite's nearby launching area. The craft, ranging from very old ones to very new ones, are kept busy ferrying some 30 youngsters to a daily diet of water activities.

It's a routine that is so familiar to Gail Ali of Ijamsville, MD, who with husband, Frank, Jr., and two children has been making the drive north since 1983.

"People look at me in awe and ask, 'How many of you are going camping?' And I say, 'You have to understand. This is three generations of a very close-knit family: The original brothers and sisters, and their kids, who are first cousins, and then their kids. And that makes about 60 of us.'"

After witnessing the success of this marriage of boating and family, Gail Ali said she wouldn't change a thing. Except, perhaps, the date: "Somehow they picked my anniversary weekend to do this," she said, tongue in cheek. "I sometimes think it would be nice to have a little quiet anniversary with my husband rather than being here with all these relatives."

How long will the Ali's anniversary be toasted at a Raystown Lake picnic table? The answer rests with 28 young campers, ranging in age from 21 to 2.

"And I guess some of them will have to marry some pretty strong women," suggests Gail Ali's sister-in-law, Hilda Ali. "I mean, getting ready for this is a lot of work. The older ones have stepped back and left us to do it all, and now they come up to visit. And we may soon be getting to the point where we stay in cabins, and eventually, we'll all be staying in the resort lodge."

"And then we can open up our kids' coolers and let their food sit out all over the tables," quips Gail Ali.

Meanwhile, Hilda's husband, Peter, has his own plans for the future when he can no longer zip his 43-year-old frame around Raystown on one ski, and the chop of a runabout becomes too punishing to arthritic knees.

"When I get too old for the water sports here," said the Bethel Park resident, "my kids will have the speedboat and I'll have a pontoon boat to sit back, relax and watch."

If Joe Pasquarella has his way, his Uncle Pete can soon start shopping for that houseboat. The 15-year-old shared his resolve last summer with another passenger in the back of his dad's boat:

"You know at my great-grandmom's funeral, a bunch of us got together and made this pact. We vowed that we would keep this going even when we are adults."

Casting Lines

with Dave Wolf

The New Millenium

The fear of the new millennium is not nearly as important as finding open water right now. A burning desire to escape comes along with the holiday bills that mount up at this time of year, making the stomach churn and causing a budget to be rebuilt.

Fishing seems to help, but it's a temporary fix. Fishing is blessed with innocence and hope with each cast. It's a new adventure each time the rod is cocked to deliver the next cast. Open water in the chill of winter brings that feeling–freedom from the confinement of a 10-inch hole above a spillway.

The wind broken by the dam breast and a weak winter sun help bring warmth here. And fish gather in concentrated numbers. Their metabolism may be slowed, but there is a flash, a turning of white, beneath the foaming water before the sameness of the depth turns back to a fishless flow. I had struck too late, and I blame my numb hands and my need to feel the bend of the rod. I seek a fish that will turn with the strength of the flow, and peel line from the reel.

My spinner arches above the flash of sunlight on foaming water. The entry is quickly displaced by water that speeds by in a continual flow of seams and wakes.

The polarized glasses give me an occasional glimpse of a silver blade, churning its way toward me. My eyes try to track it in hopes of seeing the turn of a white-bellied fish.

The casting becomes automatic, each one reaching farther out into the flow. It has been labeled, "covering the water," and like the green grass of the pasture, it is always the farthest away from the shore to which I am bound. The casts lengthen quickly on my arrival.

The need to capture the first fish of the year has always held some importance, but of the new millennium, well, that first catch ranks even higher. I assume nature has not been stressed or concerned about the change as humans have. But one never knows for certain.

I had been told by Commission staff that large browns resided here, and that landing one of the larger fish may be a challenge. But even they were fishermen, cast of the same lot as I. I know fish stories are often embellished even by the most well-meaning folks, but I, of little faith, found what I had sought–a smug brown that in a simple turn took the silver-bladed spinner, and as warned, turned tail and went with the flow. The rod had no other choice but to bend, and the reel, whine.

Tightening the drag, I took off in chase, stumbling over the misplaced boulders that trapped my going around below them. I held the rod high as I stumbled up and over one and then another. I was losing line and the fish was winning the battle–not a good way to begin the new year, not good at all.

A fish below you is never a good thing, and in strong water like this, the problem intensified. Still, I found firm footing and saw the boulders ahead of me on my downstream path. It was time to stand my ground and work the fish. But the arch of the rod was great, and tightening the drag might have meant losing both the rod and the fish.

I pulled the fish hard to the right in an attempt to turn him, and then I changed direction and pulled to my left. But the fish and water were strong, and the fish pulled line out in short tugs, tiring, I was sure, but far from giving up. From the height of the boulder I put the rod straight down and pulled directly toward me. The fish reacted with another strong run, and I looked at a shiny reel where line once lay in bulk. I cranked the handle hard and pulled the fish left again, and then right. The fish now seemed confused. Finally, he turned his nose back into the flow–to my advantage.

I cranked the reel handle faster, but the big fish raced upstream. My line cut the water, and the 3:1 ratio of the reel seemed inadequate. Still, I was determined–as determined as the fish–and I tried to keep the adrenaline rush from leading to a mistake. I reeled in enough line to find the weight of the fish. He shook his head, like a puppy with a slipper. Then he made one last desperate leap to rid himself of the silver-bladed spinner. I noted the size and identified the fish as a brown trout. That alone created a bit of trembling, but the tiny spinner was attached at the outer edge of the jaw, and that made me even more nervous. It dangled precariously close to one head shake away from freedom.

I pulled hard on the rod, and tried to keep the connection between me and the fish as tight as the quick-running waters allowed. For some reason the need to bring the trout to hand was important. My mind ran more on instinct than thought. Perhaps it was the realization that the year 2000 was upon us, and that I, a mortal, and this creature, a trout, were locked in minutes that can never be completely shared with another. It was a destiny that neither of us could have predicted on this wintry day.

The fish turned shoreward, tired from fighting the flow and the pull of the line. I clamored close to the barbed wire of jagged ice. I leaned far toward the fish, holding the rod high. With an extended arm to my right, I turned to my left and touched the snout of a large brown trout.

I would not measure its length. I slipped the spinner from his jaw, and he slapped his tail on the water in departure. Sitting on the closest boulder, I gazed into the fishless water and sighed. My strength was sapped from the fight and the adrenaline rush. The winter sun bounced off the caps of white water, and I rose and cast again.

With the firsthand knowledge that all is well in the year 2000, and with expectations for the years that lay ahead and those beyond, I sense all is good, and the fishing has not changed, for here there seems to be a world that is driven by instinct.

The spinner tracked its way toward me. I became lost in thoughts of the large brown trout somewhere deep in the pool. The tug and a reaction made me mortal again. As the spinner came at me like a missile, I ducked quickly. It whistled by me to lodge firmly on a boulder some 20 feet away. I smiled and looked to be certain no one was watching, and I climbed up the bank to retrieve it.

Now I know for certain that most of the bugs of the new millennium will be worked out, and much will remain the same as it was before the page of a new year flipped before us.

PLAY

WINTER
2000

Pennsylvania • League • of • Angling • Youth

Natural Symbols of the Keystone State

by Rich Wood

Did you know that Pennsylvania has official wildlife symbols? Do you know which fish is Pennsylvania's state fish? Do you know the names of our state bird, mammal, tree, flower and insect? If you're a wise nature detective, you would find them in the same habitats. In many areas of Pennsylvania, all of these symbols can be found living together in the same natural community.

The name Pennsylvania means "Penn's Woods." The founder of Pennsylvania, William Penn, was amazed by the large forests that covered the land. Tall eastern hemlocks and mountain laurel were plentiful. This habitat was ideal for white-tailed deer and ruffed grouse. The trees offered shade to most of our waters. Brook trout were abundant in these cold forest streams.

These plants and animals are true symbols of the Keystone State. In the early 1930s, Governor Gifford Pinchot officially made the **eastern hemlock** the state tree and **mountain laurel** our state flower. At the same time, the **ruffed grouse** became our state bird. In 1959, Pennsylvania named the **white-tailed deer** the official state mammal. The **firefly** became the state insect in 1974.

In 1970, the **brook trout** became our official state fish. It likes cold water that is not polluted. The state tree and state flower help the trout, too. Their branches shade the water to keep it cool. The roots of these plants hold the soil in place so that it doesn't wash into the stream. The roots of these plants also offer trout hiding places in the stream. The brook trout is also one of the prettiest fish in Pennsylvania. The speckled back and sides help camouflage the fish in the stream. The orange and white fins almost look like racing stripes! Because it needs clean water, the brook trout is a perfect choice for Pennsylvania's state fish.

Today, we find wild brook trout in small, cold mountain streams. The Fish & Boat Commission also stocks brook trout in many streams. Not only are they beautiful fish, but they are a favorite of Pennsylvania anglers.

illustration-Ted Walke

Kitchen Table Experiment:
Garbage Bag Watershed

Rain that falls onto the land either soaks into the ground or runs off. Water that runs off follows tiny channels, or streams. These little streams flow into bigger streams and rivers. Some flow into lakes or wetlands. All the land from which this water flows is called a **watershed**. Let's build one!

You'll need:

☐ old newspapers
☐ large white garbage bag
☐ spray bottle full of water
☐ food coloring, such as red and blue (add only a few drops to the water if you want)

Directions:

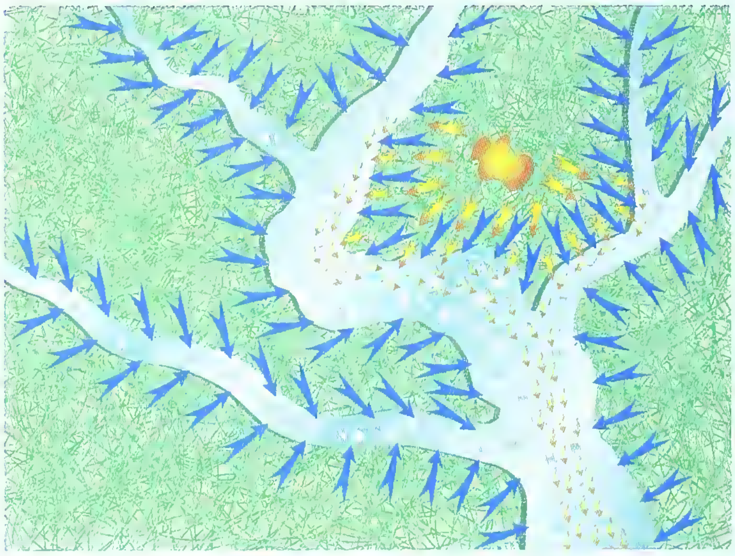
1. Cover a table or the floor with several layers of newspaper or plastic drop cloth. Crumple some newspaper and lay it on top.
2. Cut out the bottom of the garbage bag. Cut straight up one side of the garbage bag so that it opens into one large piece of plastic. Place it on top of the crumpled newspaper.
3. Next, grab your spray bottle! Make it rain all over the watershed you just created.

Watch how the water moves through your watershed. The water moves from high areas to low areas.

4. Very carefully, high up in the watershed, add a tiny drop of a different color of food coloring. Now make it rain some more. What happens to that color?

That food coloring could represent pollution. Did it move through the rest of the watershed? How might that pollution affect the rest of the watershed? How would you feel if you lived downstream from that pollution? How would you feel if you lived upstream from that pollution?

You might be glad that the pollution didn't flow past you. But did you ever hear the saying, "We all live downstream"? Each of us lives in a watershed. Watersheds are connected. Things that we do to the water in one area affect the water many, many miles away.



↙ = **runoff from rain** 🟧 = **pollution source**

Questions:

- Do you see small streams coming together to make larger streams and rivers?
- Do you see any lakes?
- What happened to the rain that fell on the highest peaks or mountains? If it separated and flowed down the front *and* back of the mountain, did it create two different watersheds?
- How many watersheds do you see?

In the real world, many things change the water in our watersheds. Make a list of the natural and human things that shape the water habitats in the watershed.

illustration-Ted Walke

Answers to "Kitchen Table Experiment" - types of rocks and soil, slope of land, amount of rain, amount of vegetation, human activities in watershed.

Focus on Habitat: Wild Brook Trout

by Walt Dietz, Northeastern ARPS

Brook trout are one of Pennsylvania's most colorful fish. They can be found in clean, coldwater streams, ponds and lakes. They are members of the trout and salmon family, and are more related to chars, also members of the trout and salmon family, than to trout. Chars include lake trout, Arctic char and Dolly Varden trout. Wild brook trout are natives to Pennsylvania and have the honor of being named our "state fish." They have not been introduced to our waters like the rainbow trout or brown trout.

Brook trout have "worm track" markings on their backs and white lines along their fins. Other names for them include eastern brook trout, speckled trout, square-tail and brookie.

Brook trout like water with temperatures less than 68 degrees and lots of oxygen. This is why they are most often found in fast-moving streams or cold mountain lakes and ponds. A brookie might also be found in a meadow stream, as long as the water temperature is cold enough.

Finding good habitat is the key to catching this colorful sport fish. Look for them around tree roots, fallen trees, undercut banks and the edges of large rocks. You might even catch a wild brookie as it leaves cover to feed in a stream riffle or as it enters a quiet pool to sip a hatching mayfly.

A wild brook trout will live a short life of about two years (five years maximum). They usually don't grow more than 12 inches long. The best time to see a wild brook trout is in the fall when they spawn. The colors of male brook trout become much brighter. Females construct a nest on the gravel bottom of the stream. Unpolluted water and clean stream bottoms are important to the survival of brook trout eggs.

A brook trout becomes an important part of the food chain after it hatches. The food chain in a coldwater stream may look like what you see here. The energy for this type of stream comes from leaves, sticks and organic remains (detritus). Aquatic insects eat the detritus and then become a food source for smaller fish. A young brook trout eats small aquatic insects. Large brookies add crayfish, worms and small fish to their diet. The food chain doesn't end with the brook trout. Kingfishers, mergansers, raccoons or fishermen may turn the brook trout into a delicious dinner!

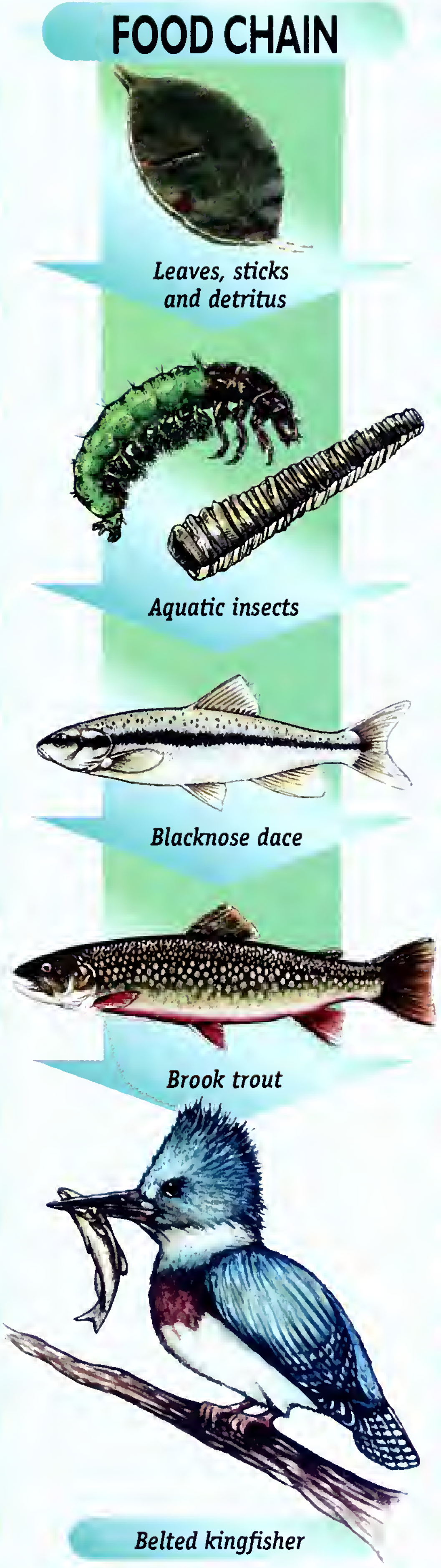
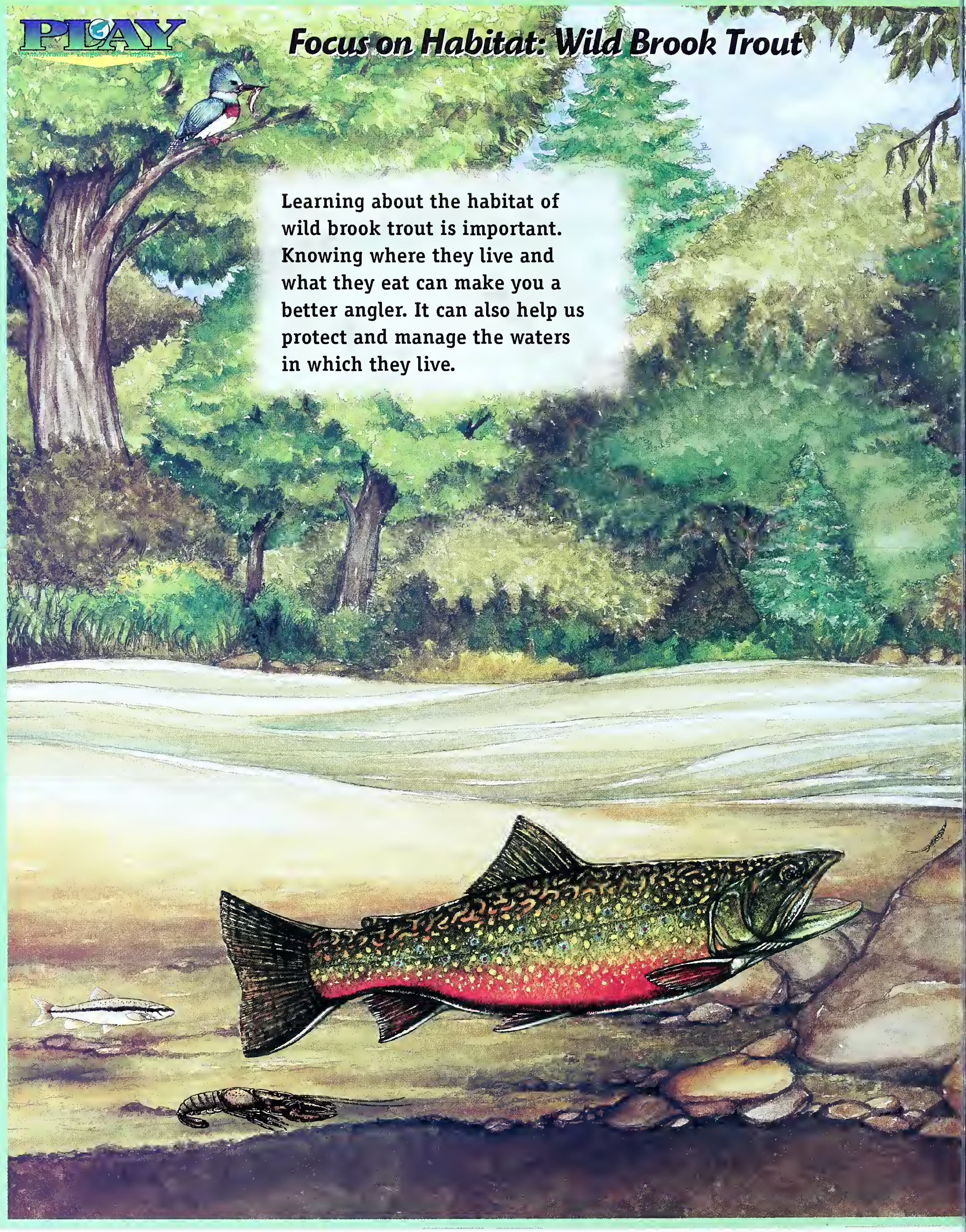


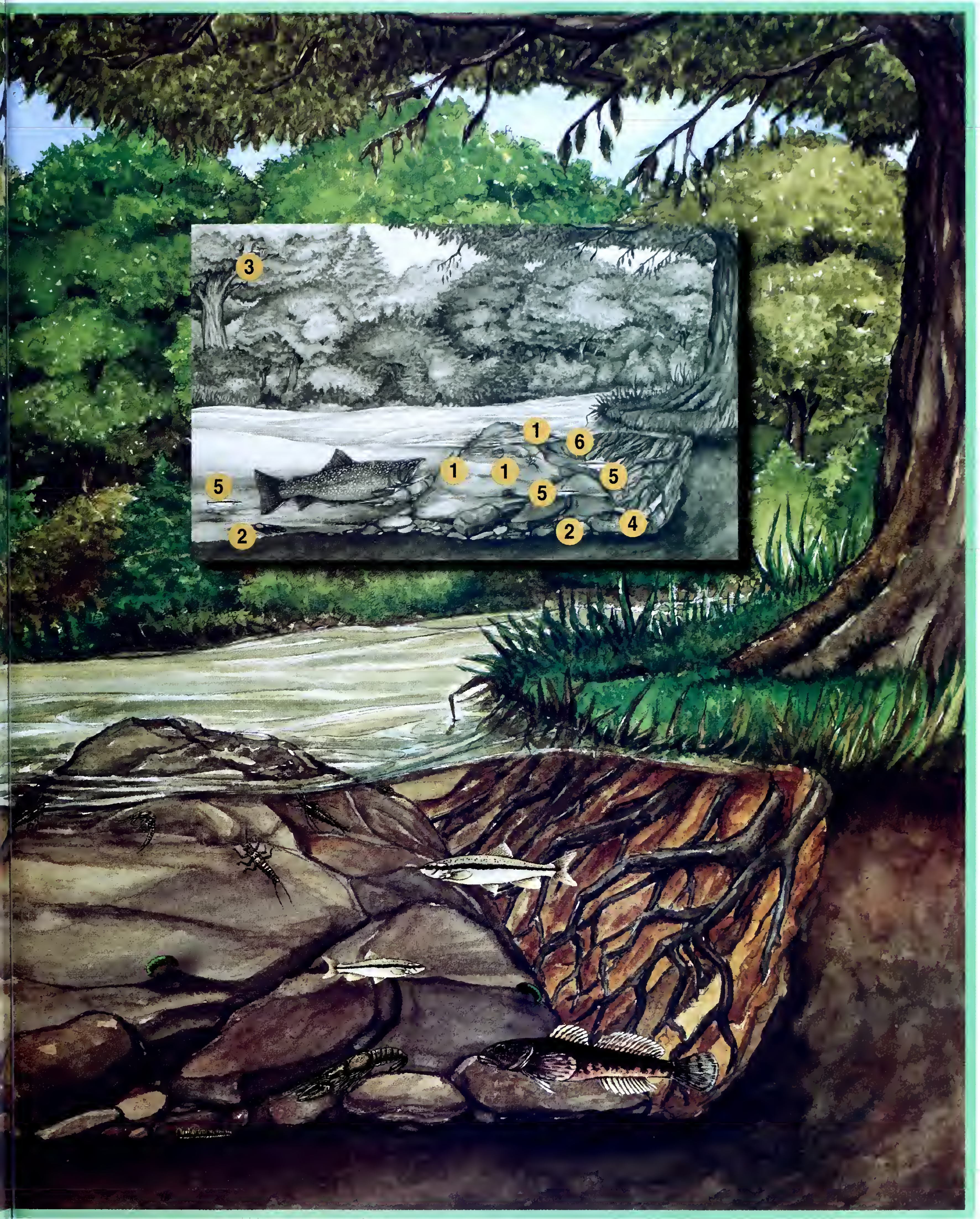
illustration-Ted Walke

Focus on Habitat: Wild Brook Trout



Learning about the habitat of wild brook trout is important. Knowing where they live and what they eat can make you a better angler. It can also help us protect and manage the waters in which they live.

① *caddisfly larva, stonefly and mayfly nymphs* ② *crayfish* ③ *belted kingfisher*



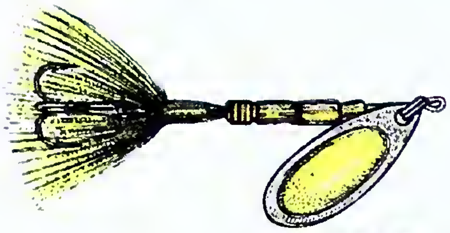
④ *slimy sculpin* ⑤ *blacknose dace* ⑥ *water penny*

illustration Ted Walke

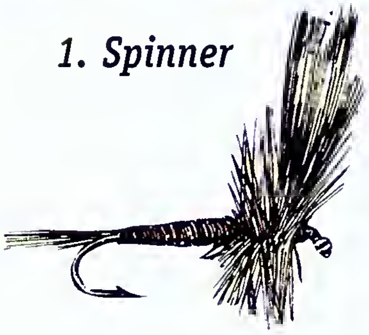
Best Bait for Brookies?

Directions: Match the artificial lure with the live bait it is intended to imitate.

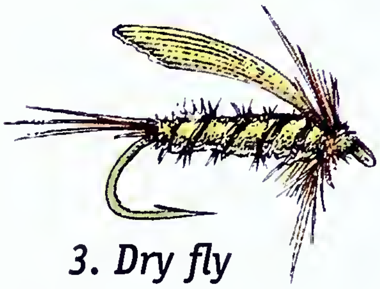
Artificial Lure



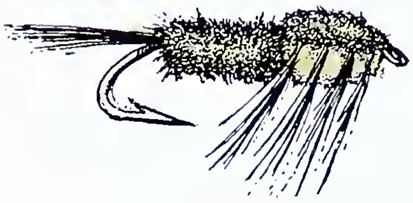
1. *Spinner*



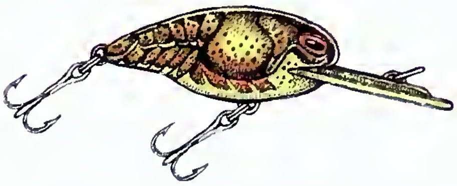
2. *Dry fly*



3. *Dry fly*

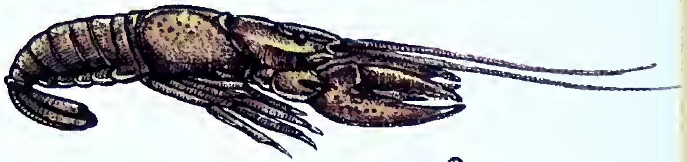


4. *Nymph*

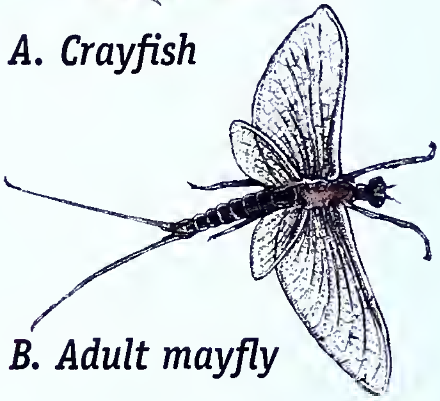


5. *Small crankbait*

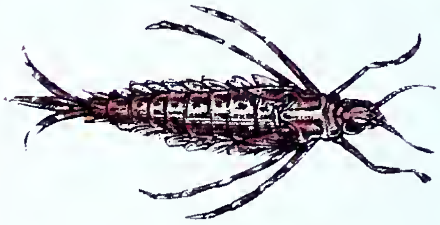
Live Bait



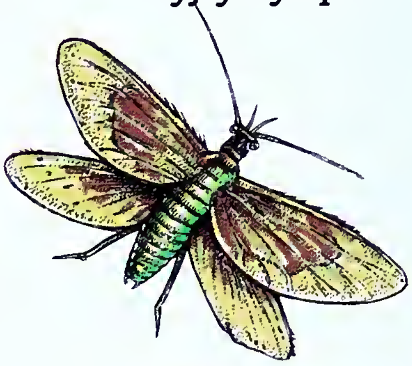
A. *Crayfish*



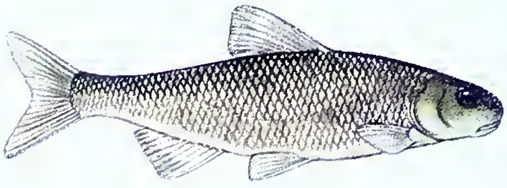
B. *Adult mayfly*



C. *Mayfly nymph*



D. *Caddisfly*



E. *Minnow*

illustration-Ted Walke

Answers: 1-E, 2-B, 3-D, 4-C, 5-A.

What's Wild?

by Laurel Garlicki, Northcentral ARPS

As you know, the Commission stocks fish across the state to provide a variety of fishing opportunities. These fish are grown in our hatcheries. Then we stock them so you can catch them. We stock nearly 5,000 stream miles with trout that you can catch and keep. We call these trout "catchable" because they are at least 7 inches long. That's the minimum size for trout. But there are parts of some trout streams that we don't stock. These waters are still great places to fish.

Why don't we stock them with catchable trout? Because they have lots of wild trout in them. There are so many wild trout that we don't need to stock them. But what are "wild trout"? Wild trout are fish that are not stocked. These fish are born and grow up in the wild, not in a hatchery.

Each year, Commission biologists survey many streams. They look at a part of the stream called a section. They count, weigh and measure the trout collected in that section. They know that little ones (less than 6 or 7 inches) were born there. These trout are wild, because all the hatchery fish are 7 inches or bigger. They also know that the bigger ones collected grew up in that stream. If there are enough wild trout (of all sizes) in that part of the stream, we don't stock fish there. Fish and Boat Commission biologists call these sections of streams "wild trout waters." There are almost 1,500 stream miles of wild trout water. These waters have great habitat for trout. More than half of these miles have lots of wild brook trout.

The Fish and Boat Commission works hard to protect these fish. These streams have shorter seasons when fish can be kept. Many have larger minimum sizes. The "best of the best" even have smaller creel limits.

We also work hard to protect these special waters from human activity. Activities like logging, mining and development could damage important habitat. Without habitat, we wouldn't have wild trout.

Catch-and-Release Tips

Reel the fish in as quickly as possible.

Try not to touch the fish.

Use barbless hooks and remove them from the fish's mouth as quickly and carefully as possible. Pliers can help you get the job done faster.

Keep the fish in the water as much as possible.

If the fish is hooked so deeply that you cannot see the hook, cut the line near the fish's mouth and return it to the water.

If the fish is bleeding and of legal size, keep it for dinner.

If you want something to remember your catch by, have someone take a picture of you and the fish.

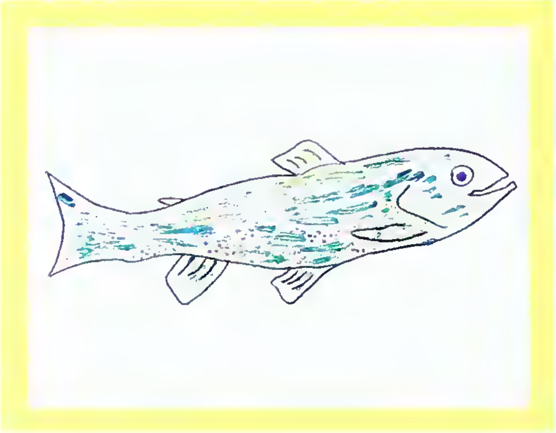
photos-Art Michaels

2000 State-Fish Art Contest

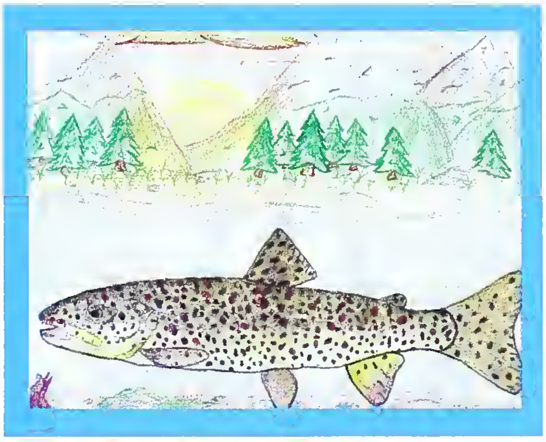
Enter TODAY!

Tell your friends! Show your classmates! Use the entry form to the right of this page and be sure to read all the rules and regulations. A great project for budding artists from ages 4 to 12.

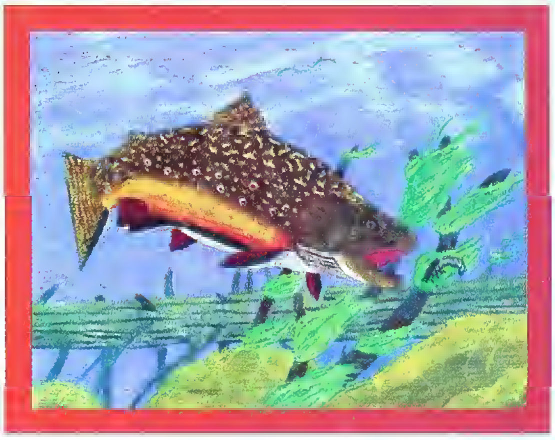
1999 Pennsylvania Winners



Jacklyn Roadcap
Grades 4-6 winner



Patrick Lowe
Grades 7-9 winner



Samuel Philip
Grades 10-12 winner

COLORFUL PATCHES!

Limited-edition patches sell for $4.71 each plus 29 cents state sales tax (only items shipped to PA addresses) for a total of $5 each. Please include $2 for shipping orders under $10 and $3 for shipping orders of $10 or more.

quantity	*actual size=4 ³/₈" wide by 3 ³/₄" wide*	total
	1997 Rainbow darter patch	
	1998 Copperhead snake patch	
	1999 Leopard frog patch	
	2000 Painted turtle patch	
	Shipping total	
	Amount enclosed	

Name ______________________ Age ________

Address ______________________________

City ____________ State ________ Zip ________

Make checks payable to: Pennsylvania Fish & Boat Commission. Mail to:
Pennsylvania Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000.

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The Pennsylvania League of Angling Youth is an educational program designed to reach youngsters. Members receive a colorful sew-on patch, quarterly newsletter, publications, access to the PLAY Correspondence Center and more. *It's a bargain at only $3.00 a year. Sign up today!*

Name ______________________ Age ________

Address ______________________________

City ____________ State ________ Zip ________

Make checks payable to: Pennsylvania Fish & Boat Commission. Mail to:
Pennsylvania Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000.

Wildlife Forever State-Fish Art Contest Entry Form

***Important for teachers:** If part of a classroom project, please fill out teacher and school information before duplicating and distributing to students. Duplicate and glue to back of artwork.*

Entry Deadline: Postmarked by March 31. Addressed to:
Wildlife Forever, State-Fish Art Contest, 10365 West 70th Street, Eden Prairie, MN 55344

Grade *Check one*	☐ 4th	☐ 5th	☐ 6th	☐ 7th	☐ 8th	☐ 9th	☐ 10th	☐ 11th	☐ 12th
	Group I			Group II			Group III		

Please Print or Type

Contestant ______________________________
Last Name First Name Birthdate

Home Address ______________________________
Street or P.O. Box

____
City State Zip

Telephone (   ) ______________ (   ) ______________
Home Parent Daytime

Art Entry Title ______________________________

Composition Title ______________________________

Fish Species ______________________________

Medium Used ______________________________

Contestant's Teacher ______________________ (   ) ________
Last Name First Name School Phone

School Address ______________________________
School Name (Full)

____
Street or P.O. Box

____
City State Zip

I hereby certify that this is my original work and is not a copy of published photographs, magazines, book illustrations, or other materials protected by copyright laws. I understand that Wildlife Forever and other sponsors are not responsible for loss or damage to my artwork and/or composition. I grant exclusive right to Wildlife Forever and its designees to utilize my artwork and/or composition for reproduction and promotional purposes, and to display my art; also, I agree that my artwork and/or composition may be used, altered, or published as they see fit without compensation to me.

Signature of Student ______________________________
Date

Signature of Parent or Guardian ______________________________
Date

Entry questions should be directed to StFishArt@aol.com or by calling 877-FISHART. Artwork must be 9 x 12" HORIZONTAL; no more than ¼" thick; do not mat or frame; do not have lettering or borders on the front.

CONSERVE 2000
PROTECT PENNSYLVANIA'S WATERS

PA's Official State Fish
Brook Trout

Wildlife Forever State-Fish Art Contest Rules & Regulations

How to Enter

Completed portfolios must be postmarked by March 31 of each year. Portfolios must include:

- A completed entry form.
- Artwork of participant's state fish.
- 1-page composition about participant's state fish, its habitat, or efforts to conserve it.
- Entry forms must be completed, signed, and glued to the back of the original artwork.

Completed entries should be mailed to:

Wildlife Forever, State-Fish Art Contest, 10365 West 70th Street, Eden Prairie, MN 55344

PA's Official State Fish
Brook Trout

Rules & Regulations

- The State-Fish Art Contest is open to children in grades four through twelve attending public, private, or home-schools in the United States. Only one entry per child will be accepted.
- Portfolios will be judged on the quality of the artwork.
- The artwork must call attention to the official fish of his or her home state. If the home state has two state fish, then the contestant may design either fish. If the home state does not have an official fish, that state's fisheries department has selected an alternative fish species. The fish must be depicted in its natural underwater habitat. Information about each state fish is available on the internet at http://www.statefishart.com or on America Online (Keyword: fishart).
- All artwork must be the contestant's original, hand-done creation. **Photographs and computer-generated artwork will not be accepted.**
- All artwork must be 9" x 12" and *horizontal*, without a mat, frame, cover sheet, or border. Art techniques may include scratch-board, pointillism, chalk, charcoal, dry brush, watercolor, crosshatch, lead, collage, linoleum printing, or crayon. (Please note: if contestants use chalk, charcoal, or lead they should seal it with an adhesive).
- All artwork must not exceed ¼ inch in total thickness.
- No lettering, signatures, or initials may appear on the front of the artwork. Any artwork with such identifying characteristics will be disqualified and eliminated from the competition.
- Completed portfolios must include a typed composition or theme paper not to exceed one page in length. Compositions should be related specifically to the characteristics of the state fish, its habitat, behavior, or efforts to conserve it. The composition must include the student's name and address.

Prizes

- All contestants will receive a certificate of participation.
- Final judging will take place on Earth Day of each year. Winners will be announced the following week.
- Three winners from each state will be selected, one winner per grade group (4-6th, 7-9th, 10-12th) for a total of 150 winners — 50 states x 3 winners = 150.
- All winning designs will be displayed at the Mall of America in Minneapolis, Minnesota at the Wildlife Forever State-Fish Art Expo in June.
- All winning designs will be presented online at http://www.statefishart.com and on America Online (Keyword: fishart) for one year.

The Fine Print

- The State-Fish Art Contest is not open to the immediate relatives of Wildlife Forever employees or participating sponsors.
- It is the contestant's responsibility to inform Wildlife Forever of any change of address.
- Contestants living in Washington D.C. may use either the Maryland or Virginia state fish in their portfolios.

Wildlife Forever:

- Has the right to use the name of any State-Fish Art contestant without compensation.
- Retains ownership of all artwork entered in the contest. In order to promote the Wildlife Forever State-Fish Art Contest, products such as posters, prints, T-shirts, etc. may be produced from winning artwork. Any monies realized from the sale or licensing of the artwork will be used to support the contest, wildlife conservation, and education initiatives. The winning artists must provide an autograph without charge to Wildlife Forever.
- Retains all winning entries until June 1of the following year and will return the winning entries to the students in June upon request.
- Will return all non-winning entries upon request after August 31 if the student provides a self-addressed 10x13-inch envelope and a $10 processing fee (a check, not cash, made out to "Wildlife Forever").
- Reserves the right to destroy unclaimed entries one year after the contest.
- Will not insure entries it receives or be responsible for loss or damage of the entries.

All About Engine Oil

by Alex Zidock Jr.

large photo-Alex Zidock Jr.; small photo-Art Michaels

The oil you pour into your four-stroke boat engine (or your automobile engine) passes through little tubes and big pipes, maintains pressure for applications, and travels through valves and passages, carrying harmful waste and deposits away to be filtered. And, like the human circulatory system, unless this life-blood of your marine engine is kept clean of impurities, and if its flow is not restricted, it will contribute to long engine life.

Modern automotive-type engine oil is a lot better than its older cousin. Today's boat engine oils do not break down or fatigue as quickly under extreme use. This is important especially for marine applications because engines used for boats receive a lot more punishment than automobile engines. To match motor oil with a specific task, many manufacturers of marine oils have developed a wide variety of formulas. There are oils for two-cycle outboard engines, oils for four-stroke outboards, and oils for larger I/Os and inboards that have been blended to provide the best protection for a particular application in the marine environment.

Most manufacturers of marine engines market oil they claim to be best suited for their products. Even though some engine manufacturers suggest that you must use their engine oils and lubricants to maintain warranties on their products, the Magnuson-Moss Warranty Improvement Act (MMWIA) and general principles of the Federal Trade Commission (FTC) say differently. The act enforces that an engine manufacturer may not make its warranties conditional on the use of any specific brand of motor oil or related lubricants unless the manufacturer provides such products free of charge. However, if you have an engine that is still under warranty, it's best to check the fine print. An equipment manufacturer can obtain a waiver of the MMWIA's ruling only if it proves to the FTC that the equipment would function properly only if specific brands of motor oil or related lubricants are used.

Motor oil's main job is to lubricate. It keeps your engine from rusting and actually acts as a sealant between the cylinder walls and the piston rings. It suppresses exhaust and raw gasoline from entering the oil pan, or sump, while it coats the cylinder wall with a film of oil so that the rings never actually touch the metal of the cylinder walls. In other areas of the engine, motor oil minimizes wear where there is metal-to-metal contact. It's a big job, and that's why engine oils have to meet certain standards.

SAE

Engine oils, whether used for four-stroke marine application or for automobiles, are measured by the Society of Automotive Engineers (SAE). The information is printed or stamped on every container. The oil is tested at two temperatures. Oils tested at 0 degrees are marked with a grade number first followed by a "W." The lower the number, the thinner the oil. A 5W oil is thin oil, and it is usually used in colder temperatures. Multi-use, or multigrade, oils are also tested at 210 degrees, the normal operating range for modern engines. These oils are marked with a grade at 0 degrees first, followed by the letter W and then when the oil heats up to 210 degrees, the viscosity rating that the oil reaches.

For example, 5W30 oil starts out cold at 5 grade and reaches 30 grade at operating temperature. Viscosity is a measure of an oil's flow characteristics, or thickness, at certain temperatures.

photo-Alex Zidock Jr.

Engine manufacturers have determined which is the best oil to use with your marine rig, and you should stick with it. In many cases, your operator's manual gives you options for cold-weather operation as well as warm-weather operation.

Performance levels

Another emblem on oil containers meant for four-cycle use is the circular symbol for the American Petroleum Institute (API). The top half of the "donut" describes the oil's performance levels. The letters "SJ" are the current designation for gasoline engines. "SJ" was introduced in 1996 by the SAE. Some older engines may call for oils with the designation "SH" or "SG." For gasoline engines, however, the highest-performance category of oil (SJ) includes the performance properties of each earlier category. So if you use oils with the designation "SJ" in any four-stroke gasoline engine, you will be providing full protection for that engine.

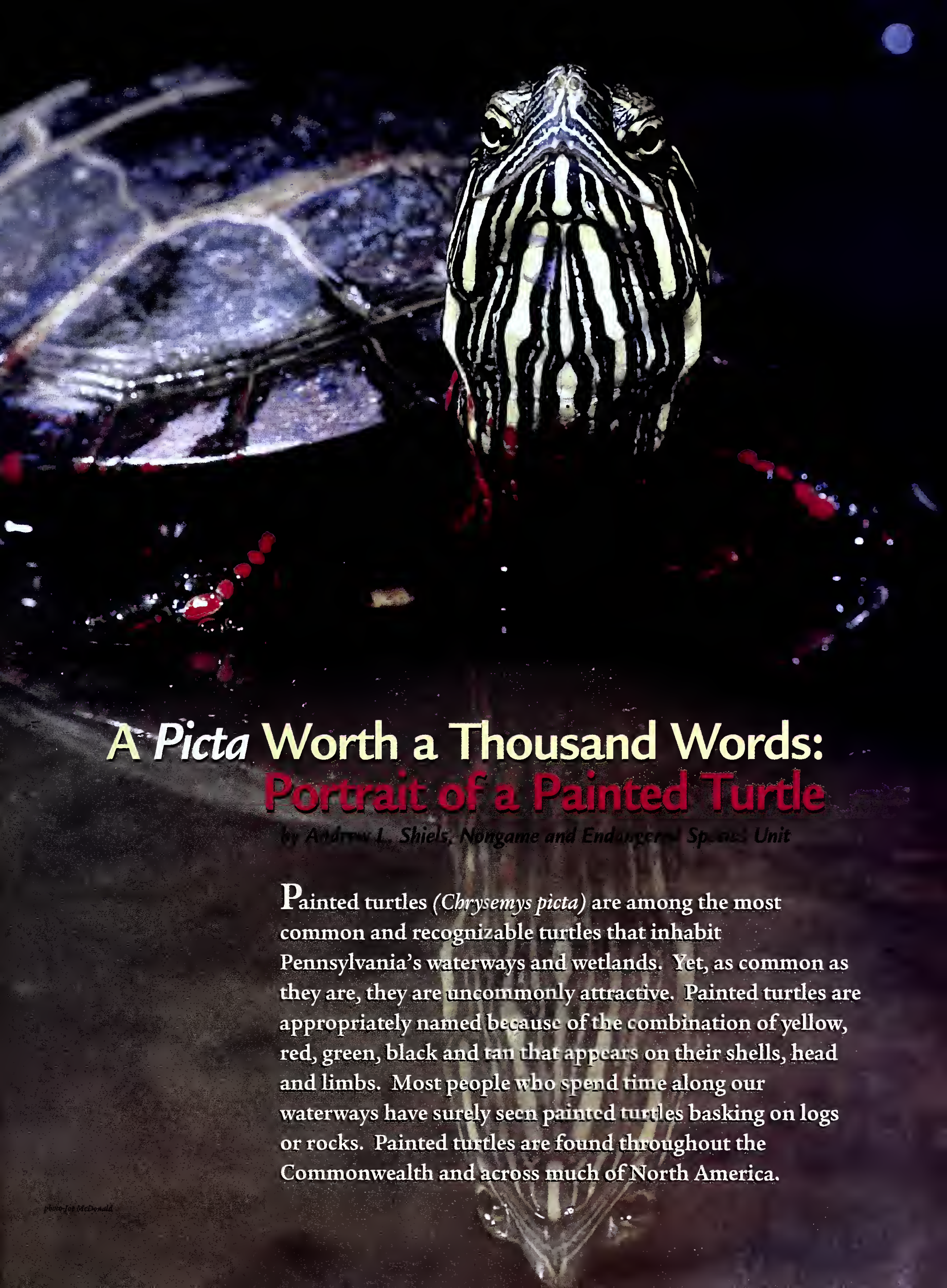
The diesel engine's API performance levels are marked "CH-4." However, the latest performance category usually, but not always, includes the performance properties of an earlier performance category. In this case, it's best to go to the owner's manual for specific instructions if you run a diesel engine in your boat.

Motor oils blended specifically for marine use in four-stroke applications may not carry the API logo, but they usually refer to the designation somewhere on the container. A popular marine blend says, "Meets and exceeds API service requirements for SJ, CF-2, CH-4 with a multi-functional additive that assures 'Marine Grade' oil performance."

The new oils are really concoctions of a variety of materials. And even though they provide protection longer, and under more adverse conditions, engine oil should be changed regularly to get rid of the accumulation of debris that the detergents scrub from inside the engine. Inhibitors are added to prevent rust, antifoaming agents keep the oil smooth, and other ingredients keep the oil at a constant operating viscosity. All of these additives eventually break down and quit working–more reasons for changing oil frequently.

So far we've been mostly talking about oils used in four-stroke outboard marine engines, sterndrives and inboards, typically the same type of oil that is used in automobiles. These engines have a pool of oil in an oil sump, or what's more commonly called the "oil pan." The engine is constructed so that the oil is pumped from the reservoir to wherever it's needed in the engine for lubrication, but it is never mixed with the gasoline.

Be prepared to move up to the new technology in outboard and four-stroke marine engines. In addition, be prepared to perform regular oil maintenance checks if you want to keep your investment running smoothly, and without costly repairs, for years to come.



A *Picta* Worth a Thousand Words:

Portrait of a Painted Turtle

by Andrew L. Shiels, Nongame and Endangered Species Unit

Painted turtles *(Chrysemys picta)* are among the most common and recognizable turtles that inhabit Pennsylvania's waterways and wetlands. Yet, as common as they are, they are uncommonly attractive. Painted turtles are appropriately named because of the combination of yellow, red, green, black and tan that appears on their shells, head and limbs. Most people who spend time along our waterways have surely seen painted turtles basking on logs or rocks. Painted turtles are found throughout the Commonwealth and across much of North America.

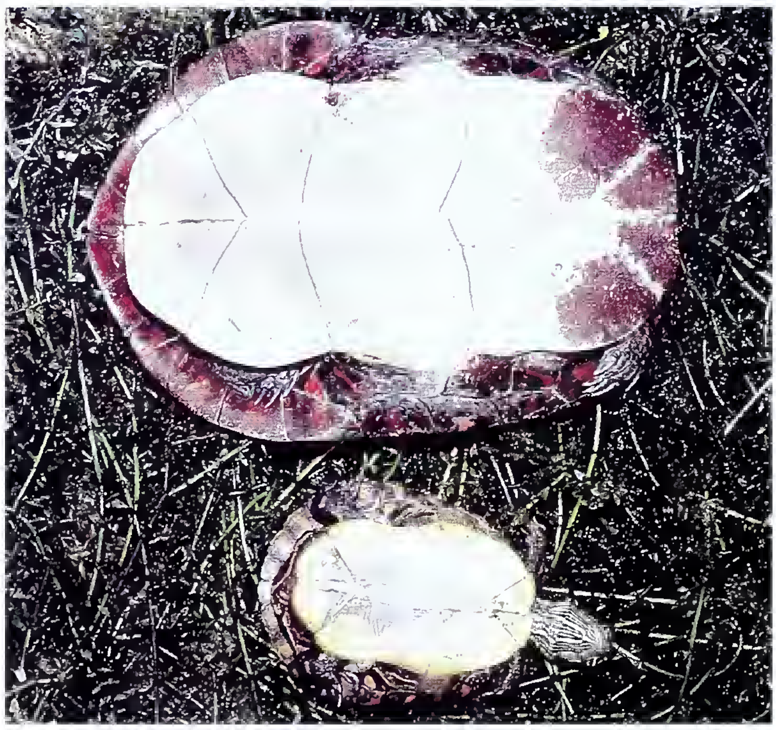
photo-Joe McDonald

As a species, painted turtles have the largest distribution of any North American turtle. Herpetologists have identified four subspecies of painted turtles. The southern painted turtle (*Chrysemys picta dorsalis*) ranges from the midwestern U.S. through the Mississippi River valley to Texas and Oklahoma. The western painted turtle (*Chrysemys picta bellii*) ranges from the upper midwestern U.S. through the northern portion of the western states, southern Ontario and into British Columbia. Some populations also occur in the southwestern U.S.

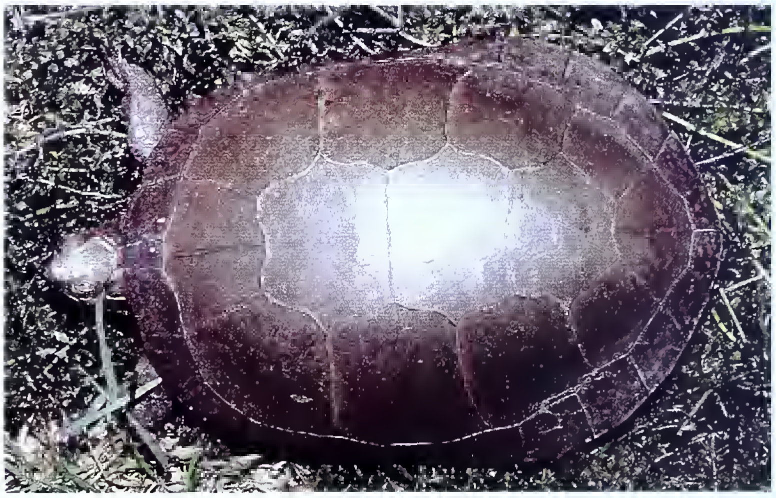
Two subspecies, the eastern painted turtle (*Chrysemys picta picta*) and the midland painted turtle (*Chrysemys picta marginata*), are found in Pennsylvania. The eastern painted turtle and the midland painted turtle are very closely related. As subspecies they can and do interbreed to produce offspring. Throughout their shared range, interbreeding produces what is known to biologists as an "intergrade." Thus, this is a tale of two turtles.

Identification

Identification among species and subspecies requires a brief explanation of turtle shell structure. Turtles have two shells. The top shell is known as the carapace. The bottom shell is the plastron. Both shells consist of individual plates called scutes, which are actually modified scales. Painted turtles have four types of scutes on the carapace. The nuchal scute is a single plate at the front of the shell directly behind the head. The scutes along the top of the carapace are called vertebrals. They are so named because directly underneath them on the inside of the shell is where the turtle's vertebrae, or skeletal structure, are attached. Costal scutes are those that are located along the side of the carapace. Finally, the marginal scutes are those that are arranged around the edge of the carapace.



Although the plastron color patterns change as juveniles (smaller turtle) mature into adults (larger turtle), the dark splotches characteristic of midland painted turtles remain.



In identifying painted turtles we need to examine the vertebral and costal scutes. The eastern and midland subspecies can be identified by the alignment of the scutes on the carapace and the pattern or color of the plastron. In the eastern subspecies, the vertebral scutes are aligned with the costal scutes, and the plastron is yellow or tan with no apparent pattern of darker color. The midland subspecies displays a misalignment of the vertebral scutes and the costal scutes as well as a light plastron with a dark blotch in the center. Sometimes the plastron of adult midland painted turtles is a solid dark color. When the subspecies breed, the resulting intergrade usually exhibits combinations of physical characteristics that are present in each of the parents.

Subspecies typically occur as a result of geographic separation of populations. When these populations or subspecies have overlapping ranges, interbreeding tends to dilute the distinctive physical characteristics that led herpetologists to separate them into subspecies. For some time, there has been an apparent range expansion of midland turtles eastward. Especially in the eastern counties of Pennsylvania, turtles encountered in the field are typically intergrades.

photos-Andrew L. Shiels

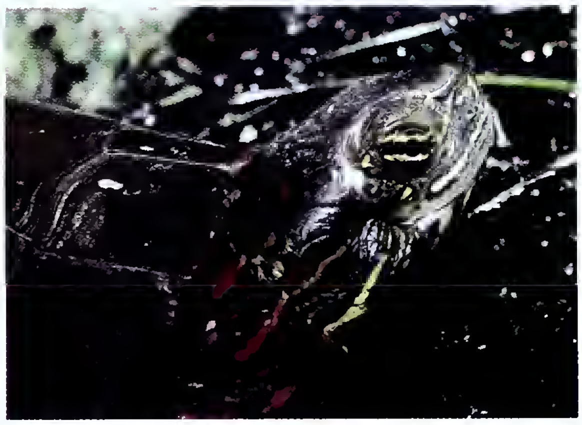
Compared to the other turtle species found in Pennsylvania, painted turtles are mid-sized. Carapace lengths in adults can reach nearly 10 inches. But a typical individual five to six years old will be around six to eight inches in length. The leading edges of the vertebral and costal scutes are often bordered in white or tan. They help to separate this species from the Pennsylvania threatened red-bellied turtle (*Pseudemys rubriventris*) that attains much larger sizes at adulthood and has a uniformly dark carapace. The marginal scutes of a painted turtle have red lines or crescent-shaped markings. Bright-yellow stripes and several yellow spots are present along the sides of the head and neck. Painted turtles also have red stripes running lengthwise on their legs.

Habitat, life history

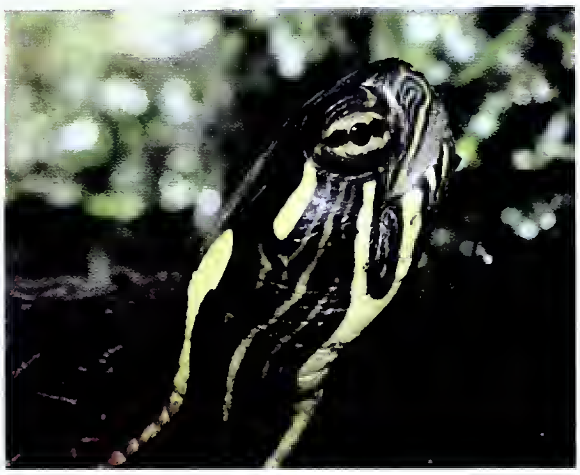
Painted turtles prefer wetlands, ponds, lakes, canals and other still or slow waters. Soft or mucky bottoms are preferred to rocks or gravel. Downed trees, logs, rocks, mudflats or exposed banks are usually found where painted turtles live.

Basking in the sun is important for turtles and most reptiles to ensure proper regulation of temperature. Turtles are "poikilothermic," a term derived from Greek words meaning "variable temperature." It means that their body temperature is largely governed by the temperature of their surroundings. Basking elevates body temperature and results in an increased metabolic rate to assist in obtaining food and digestion. Elevated body temperatures are also needed to avoid and fight off infections. Therefore, a lack of appropriate basking locations can limit the presence or abundance of painted turtles.

Preferred foods include submergent aquatic vegetation such as pondweed, emergent vegetation in the form of cattail seeds or stalks, and floating plants like duckweed or filamentous algae. Areas of dense aquatic vegetation provide not only a smorgasbord of choices, but also secure cover where the turtles can avoid predation. Although vegetation comprises the majority of their diet, they eat a variety of foods. They are more accurately described as omnivores. True opportunists, they also consume small fish, amphibians, aquatic insects such as damselfly nymphs and dead animal matter that is typically in the form of fish.



Side headshot of an adult midland painted turtle. The red and yellow stripes on the neck and the red "squiggles" on the edge of the shell help identify the adult midland painted turtle.



Side headshot of a juvenile midland painted turtle. Midland painted turtles are omnivores. They eat small fish, amphibians, aquatic insects and dead animal matter.

photos-Andrew L. Shiels

Female painted turtles grow larger than males. Females reach sexual maturity at four to five inches and around five or six years of age. Males can reproduce at three to four years of age. As with many other turtle species, the first reproduction of a female is a function of shell length. That is, to develop and store eggs, females need to have a large enough body cavity to allow eggs to be produced, carried and deposited. Nesting occurs from May to July with peak activity in mid-June.

A female can lay between three and 14 eggs on land in a sandy area that she has excavated. The eggs incubate unattended in the soil for 65 to 80 days, depending on the air and soil temperatures. Like some other turtle species, sex of the hatchlings is determined by the temperatures the eggs were exposed to in the nest. Cooler temperatures produce males. Warmer temperatures produce females. In a typical turtle nest, some eggs will be closer to the surface and others may have been laid first and are deeper in the soil. These slight differences in position in the nest produce enough variances in temperature to ensure that both males and females can be produced from the same nest.

Turtle-watching

Unlike songbirds that can be recognized by their calls, seen at feeders or observed through binoculars, most reptiles are not easily observable. Species that have camouflaged coloring or spend much of their time underground or underwater are easily overlooked by the casual observer. However, painted turtles are a species that can dependably be seen by those who know where to look and what to look for.

As mentioned earlier, painted turtles spend significant amounts of time basking in the sun. Basking activity is greatest during the warmest part of the day in the spring and fall, and occasionally during early morning in the summer. A downed tree in a lake, pond or slow-moving river near areas of submerged aquatic vegetation is a prime location to search for painted turtles. In most lakes or ponds, shallow, soft-bottomed areas with a lot of aquatic vegetation occur where the feeder stream enters because of accumulations of soil and sediment. These are prime areas to look for turtles.

Basking turtles are easily spooked, so some stealth is required. One method to get close to basking turtles is simply to walk along the shore until you see turtles basking. Then get as close to the basking site

photo-Joe McDonald

as possible without disturbing the turtles. When you get too close, they will slip back into the safety of the water. This is when you will want to find a good vantage point for viewing. Sit down and remain quiet. After 15 or 20 minutes, the turtles will usually climb back onto the log or rock to bask. This works best when the air temperatures are in the 50-degree to 75-degree range. That's when turtles need to spend significant amounts of time in the sun and thus will be more easily seen. Accompanied by a field guide and a good pair of binoculars you may also be able to see and identify other turtle species. Many Commission-owned lakes contain painted turtles and would be excellent places to look for painted turtles.

Even though turtle-watching will probably never rival birdwatching in terms of human participation, it can add variety to the naturalist's outdoor excursions.

Under the fishing and boating regulations, a properly licensed person may collect two painted turtles per day and have a total of two painted turtles in possession. This is lawfully allowed, but we do not necessarily encourage people to collect these turtles. Turtles kept as pets usually soon become ill because of the lack of a proper diet, insufficient heat, or from disease or parasites. Unfortunately, when pet turtles become ill, people often return them to the wild. This is an unwise practice because unhealthy individuals may be released into a healthy wild population, which risks spreading disease. In addition, if a turtle is released into some other area than where it was initially collected, it may not be adapted to survive in its new habitat.

The best way to enjoy our native turtles is to observe them in the wild as they go about their business of being turtles. Indeed, in most cases, it would be better to take a picture than a "*picta*"!

More Turtle Resources

Midland painted turtle patch. In 2000, the Commission continues its series of nongame species limited-edition patches with a midland painted turtle. Consistent with all patches in this series, only 7,500 midland painted turtle patches have been produced. Patches promote all aspects of nongame species, especially their biology and conservation. The patch becomes available after January 1, 2000. Each sells for $4.71 plus 29 cents PA state sales tax for a total of $5.00. Include $2.00 shipping and handling for each order.

Limited quantities of the 1999 northern leopard frog patch, 1998 copperhead patch and 1997 rainbow darter patch are available. Contact: Educational Media Section, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000.

Pennsylvania Amphibians & Reptiles. Another excellent resource on turtles and Pennsylvania's other reptiles and amphibians is the Commission's book, *Pennsylvania Amphibians & Reptiles*, by Larry L. Shaffer. This 161-page full-color book details information on the characteristics, identification, range, habitat, reproduction and food of Pennsylvania's salamanders, frogs, toads, turtles, lizards and snakes.

The book sells for $9.43 plus 57 cents PA state sales tax and $2.00 for shipping and handling (total of $12 for a book sent to a PA address). Contact the Commission Educational Media Section at the address above.

Turtles wall chart $ .94 plus 6 cents tax and $2.00 postage. Send order to the PFBC address above.

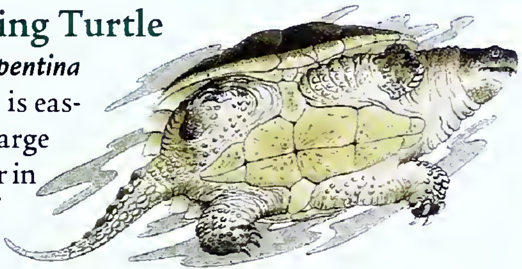
Turtles of Pennsylvania

TURTLES OF PENNSYLVANIA
PENNSYLVANIA FISH & BOAT COMMISSION

Pennsylvania has 13 species and subspecies of turtles in four families and 10 genera (the midland smooth softshell turtle, not appearing here, is believed to be extirpated in Pennsylvania). These four pages are a pull-out poster. You can carefully take the poster from the magazine and hang it up to enjoy a look at and learn more about Pennsylvania turtles!

Common Snapping Turtle

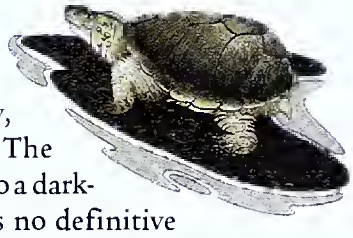
Chelydra serpentina serpentina



The snapping turtle is easily recognized by its large head, a plastron smaller in relation to the rest of the body compared to other turtles, and a tail proportionately longer than on other turtles. The tail is at least as long as the carapace and supports a series of large saw-toothed keels on its upper side. The neck is covered with loose, warty skin. The strong jaws end in a distinct hook. The carapace of the common snapping turtle is tan to dark-brown, sometimes nearly black. The carapace is quite rough, serrated along its rear margin, and has three rows of keels running its length. These keels may be difficult to discern in older specimens. The unpatterned plastron is yellow to tan and it is cross-shaped and relatively small. It does not cover nearly as much of the underside as plastrons do on most other turtles.

Eastern Mud Turtle

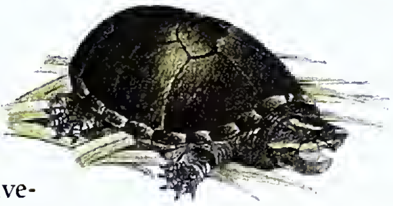
Kinosternon subrubrum subrubrum



The eastern mud turtle has few, if any, distinctive field marks. The carapace may range from an olive to a dark-brown or almost black. There is no definitive pattern or markings. The upper shell is smooth and the scales, or scutes, have no keels. The plastron is yellow to brown and may be marked at times with black or brown. The lower shell is double-hinged and contains 11 scutes. The head of the eastern mud turtle is brown and marked with many widespread yellow spots or streaks. On the male, the tail ends in a well-developed, blunt spine.

Stinkpot Turtle

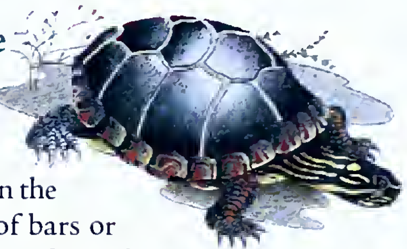
Sternotherus odoratus



The stinkpot's carapace is smooth, highly domed and elongated. It is normally olive-brown to dark-gray and may be marked with irregular streaks or spots of a darker color. The small plastron has 11 scutes with small patches of skin visible between them. There is a single hinge that is difficult to locate on most specimens. The female's tail is very short. The male's tail tends to be a bit longer and ends in a blunt, horny nail. Small, fleshy barbels protrude from the chin and throat. On most individuals, two light stripes stand out on an otherwise black head.

Midland Painted Turtle

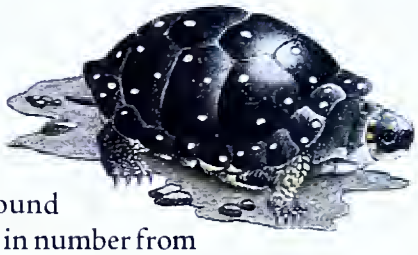
Chrysemys picta marginata



The carapace is olive or black, oval, smooth, and somewhat flattened. Red and black markings on the edges of the shell, in the form of bars or crescent-shaped patterns, are identifying characteristics. The plastron is an unmistakable yellow or red with a dark blotch in its center. Each side of the head is marked with bright-yellow spots and stripes. Yellow and red stripes define the neck, legs and tail. The upper jaw is notched.

Spotted Turtle

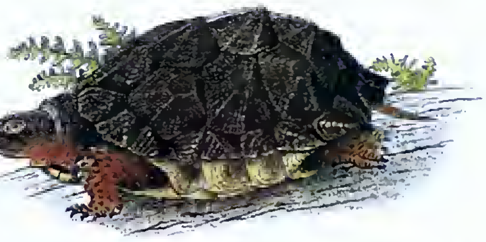
Clemmys guttata



The carapace of this small turtle is black and without keels on the scales. Its upper shell is sprinkled with round yellow spots that vary greatly in number from one specimen to another. The head, neck and legs are marked with yellow or orange spots. Its black head has an orange spot over the eyes. The lower shell, or plastron, is creamy yellow and bordered with large black blotches. The female has orange eyes and a yellow chin. The male has brown eyes and a tan chin. The male also has a long, thick tail.

Wood Turtle

Clemmys insculpta



The upper shell of the wood turtle is brown and keeled. Its scutes, or large scales, are pyramidal, a series of concentric growth ridges and grooves, larger on the bottom, becoming smaller as they approach the top. These exaggerated scales appear sculptured and are rough to the touch. The plastron, or lower shell, is yellow, and each of the scutes is margined on the outer edge with black blotches. The plastron is hingeless and can aid in distinguishing this turtle from the box and Blanding's turtles, which are considered "land" turtles like the wood turtle. The lower shell of the male is concave. The female's lower shell is flat or slightly convex. The skin on the neck and front legs is frequently reddish orange. The tail is moderately heavy and nearly as long as the carapace, or upper shell.

Turtles of Pe

MIDLAND PAINTED T

EASTERN SPINY SOFTSHELL TURTLE

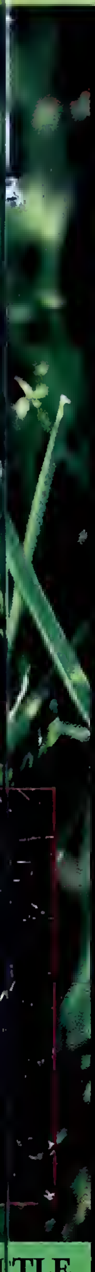
REDBELLIED TURTLE

Threatened Species

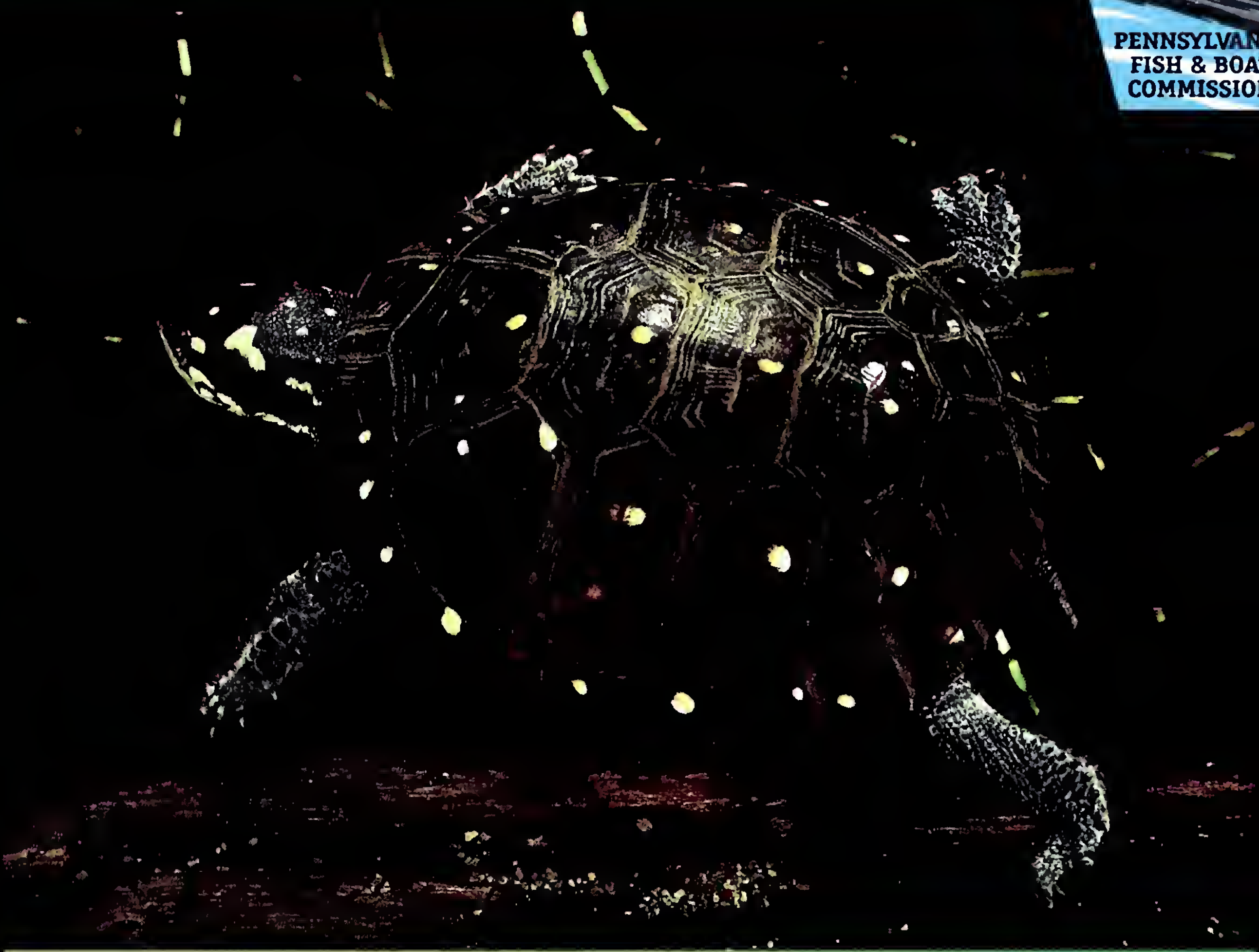
nnsylvania

TURTLES OF PENNSYLVANIA

PENNSYLVANIA FISH & BOAT COMMISSION



TLE

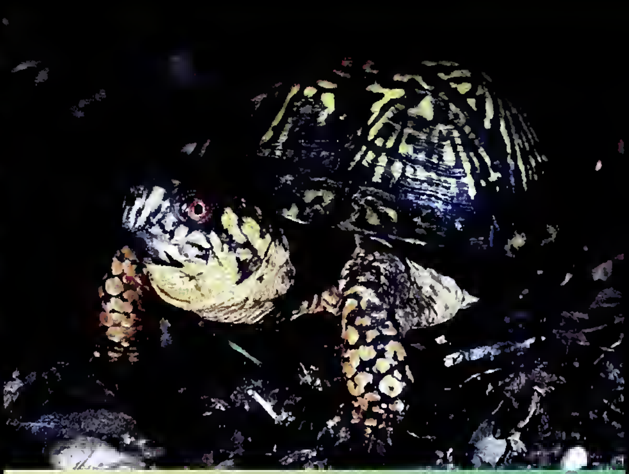


SPOTTED TURTLE

Other Pennsylvania Turtle Species:

Common Snapping Turtle
Eastern Mud Turtle
Stinkpot Turtle
Map Turtle
Blanding's Turtle *(Candidate Species)*
Midland Smooth Softshell Turtle

WOOD TURTLE



EASTERN BOX TURTLE

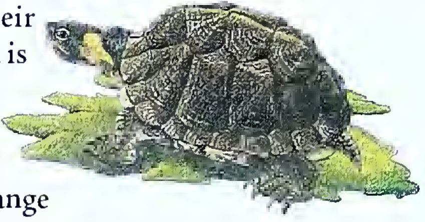
BOG TURTLE

Endangered Species

Turtles of Pennsylvania

Bog Turtle

Clemmys muhlenbergii **Endangered Species**

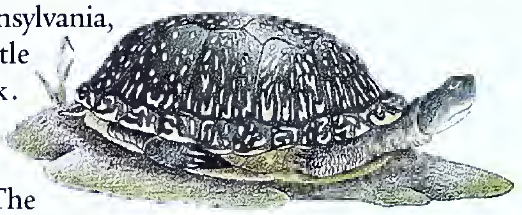


The bog turtle's carapace, or upper shell, is light-brown to mahogany. Its large scutes sometimes have a tinge of yellowish or reddish marks in their centers. The plastron, which is hingeless, is brownish black with some yellow along the mid-line. The head is black and marked with a yellow, orange or red blotch on each side, an important identification characteristic. The male has a medium-thick tail.

Blanding's Turtle

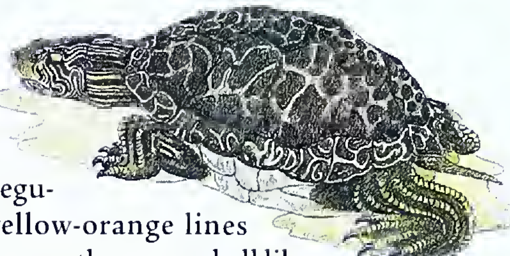
Emydoidea blandingii **Candidate Species**

The Blanding's turtle has a carapace that is smooth and shaped like a helmet. It is sprinkled with a heavy profusion of pale-yellowish spots, which in some areas become connected to form vermiculations. The plastron, or lower shell, is yellow and accented with large black blotches. The chin and throat are both bright-yellow. In Pennsylvania, only the softshell turtle has a longer neck. Large protruding eyes serve only to emphasize a flat head. The plastron is hinged so that it can be closed toward the carapace, but not to the extent the box turtle is able to close up.



Map Turtle

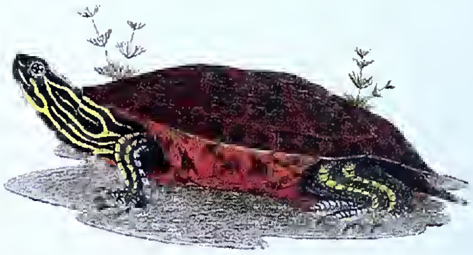
Graptemys geographica



The carapace of the map turtle is greenish to olive-brown. Its irregular pattern of thin, yellow-orange lines networking randomly across the upper shell like roads on a map gives this turtle its name. The carapace is somewhat flattened and marked with a distinct keel. The plastron is yellowish and bears no markings of any significance. Its head, neck and tail are accented with narrow yellow lines. A yellow, somewhat triangular spot appears behind each eye.

ENDANGERED	**CANDIDATE**
THREATENED	**EXTIRPATED**

Endangered is a classification given to species that are in immediate danger of becoming extinct. **Threatened** species may become endangered in the near future if they are not protected. **Candidate** species could become endangered or threatened. **Extirpated** species are those that become extinct only in Pennsylvania but not throughout the rest of their range.



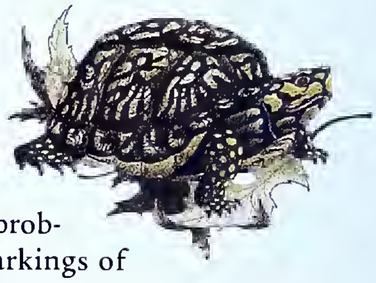
Redbellied Turtle

Pseudemys rubriventris **Threatened Species**

The carapace varies from brown to black and it usually has a mottled pattern of reddish brown. Several vertical red bars run from the center of the shell to its outer edge. The lower shell, or plastron, while sometimes coral-colored, more often is yellow to reddish. There is a prominent notch at the tip of the upper jaw, and an arrow-shaped stripe runs atop the head between the eyes to the snout.

Eastern Box Turtle

Terrapene carolina carolina

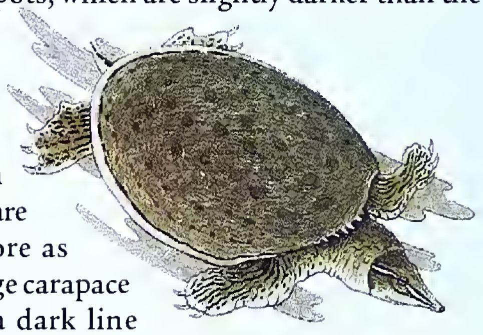


The carapace of the eastern box turtle is high-domed and keeled. Color and patterns vary greatly, but black or brown are probably most often seen, with markings of yellow, orange or olive. The sharply rising dome-shaped upper shell is an identifying characteristic. The colors on the plastron are quite varied. Markings may range from yellow-orange to olive, on a tan, brown or black background. The plastron has a single broad, movable hinge that allows the box turtle to close the plastron tightly against the upper shell. In this way it becomes effective protection from predators and other disturbances. The male usually has red eyes. The eyes of the female are normally yellowish brown. The upper jaw ends in a down-turned beak.

Eastern Spiny Softshell Turtle

Trionyx spiniferus spiniferus

The carapace, or upper shell, of the eastern spiny softshell turtle gives this reptile its name. The shell easily bends at its sides and across its rear margin. The carapace is olive to tan or yellowish brown. Spots, which are slightly darker than the background color, are bordered with black. They are more predominant toward the center of the shell. On the female, these spots are larger and appear more as dark blotches. The large carapace is also marked with a dark line around its rim. The shell is covered with a soft, leathery skin. It does not have scales, or scutes. The plastron is white and for the most part unmarked. The feet are deeply marked with streaks and spots. On adult males, the carapace is covered with very small projections that feel like sandpaper to the touch. They help distinguish the spiny softshell turtle from the smooth softshell turtle. Overall the body of the softshell turtle is flat, almost pancakelike, and oval-shaped. The snout is tubular and ends in a blunt point.



poster photos: Midland Painted Turtle (large photo), Spotted Turtle, Eastern Spiny Softshell Turtle, Redbellied Turtle, Wood Turtle, Eastern Box Turtle- Rob Criswell
poster photos: Midland Painted Turtle (inset photo) and Bog Turtle- Andrew Shiels, PA Fish & Boat Commission
poster illustrations- Tom Duran Jr

Winter Walleyes by Moonlight

by Mike Bleech

photos-Mike Bleech

Climbing out of the warm van into the frigid darkness was a shock. Then halfway down the steep river bank, my feet slipped out from under me and I bounced the rest of the way to the water's edge. Somehow I managed not to spill my minnows and not to break my rod. And with nary a soul to witness the mishap, I did not lose my dignity. I ached, though, until I felt the first soft pickup of a hungry walleye.

Winter Walleyes
by Moonlight

photo-Mike Bleech

I hooked a 4-inch shiner lightly through both lips. Then I flipped it just past the edge of the current so that the two medium-size splitshot pulled it down close to the bottom by the time the bait drifted into the calm pocket created by a sharp bend in the river bank. When the splitshot ticked bottom, I gently lifted the rod tip to keep the rig from snagging. I use a sensitive rod at least 7 1/2 feet long just for this kind of control. Each time the shot contacted the bottom, I repeated the lifting, reeling in slack line as I lowered the rod tip, slowly fishing the bait toward me.

The second drift resulted in a snag that would not let go. There is a saying among walleye anglers: "If you aren't getting snagged now and then, you aren't fishing where the walleyes are." After you fish a place a while, you get a feel for it. You instinctively lift the rod just before the splitshot hits bottom. But until then, getting snagged is part of the game. You want to concentrate on learning that feel quickly in winter. Re-tying terminal rigs is difficult with cold hands, and they get colder every time you have to remove the gloves to retie.

The fourth time I fished the shiner through the calm pocket, a walleye inhaled it just as I began the first lift.

Wait until the walleye starts to move off with the bait, I reminded myself. Now set the hook.

The light graphite rod throbbed in a deep bend. It had the feel of a walleye that could not be rushed on 6-pound-test line. Steady pressure took its toll, and minutes later I slid the net under the walleye. It was not as big as I had hoped, but still, a 4-pound walleye is pretty good.

Walleyes tend to hang with others of about the same size. At midnight, after close to an hour without a hit, I headed back to the van with two nice walleyes on the stringer, and four others back in the river with my hook mark in their jaws.

For some reason I cannot figure, walleyes caught during winter tend to be larger than at any other time of the year. More are females, which are the larger walleyes. That is reason enough for dedicated walleye anglers to do it.

The game of nighttime winter walleye fishing is not for everyone. In fact, sometimes I think it is just for darn fools. Several years ago I worked second shift in a steel fabrication shop. Often I would go walleye fishing when I got out of work at midnight, and fish until daybreak.

If you have any inclination to try nighttime winter walleye fishing, make every effort to get to the water in what might be described as balmy winter weather.

One winter night I started my car about 15 minutes before quitting time so it would be toasty warm when it was time to leave. When the time came, I drove to the river. Not until I climbed out of the car did I realize that it was bitterly cold. I had to break away shore ice to get to the water. Fishing was difficult. Even my oversize rod guides filled with ice on every retrieve, and after every retrieve I had to put my hands in my pockets with my hand warmers. After a few hours of fishing and just one small walleye, I decided to call it quits.

As I drove through town on the way home, I passed a bank with one of those signs that gives the time and temperature. The time was nearly 3:00 a.m. The temperature, -11 degrees. Now, that's nuts.

Fishing at night is difficult. Fishing during winter is rugged. But even if you are willing to put up with such inconveniences for the sake of walleyes, there are limits to how much even flaky anglers should endure. And there are a few tricks for making the obstacles less troublesome.

Dress for the occasion

Learn how to dress for the weather. Modern technology has made it easier on winter anglers. The clothing available today is far superior to that which we wore a couple of decades ago. Start with the best undergarments you can afford. Or to put it more clearly, you cannot afford not having the best. The outer layer of clothing must be wind resistant, and water repellent.

Somehow you must keep your extremities warm. I prefer rubber-bottom felt-pack boots. Mine are rated for -85 degrees. The rubber bottoms are important because you will often be standing in either shallow water or wet gravel and mud. Gloves must be warm, yet not too bulky. My favorites are pile-lined deer skin. And for the head, it is hard to beat a thick stocking cap that can be pulled down over the ears. For the worst nights, a scarf that is wide enough to cover both neck and face is comforting.

For hand warmers, I use the disposable type because they do not have any odor. They are another necessity, as far as I am concerned. Part of my philosophy on fishing is that I prefer to be clever instead of tough. Being tough is for young fellows. I do everything I can, within reason, to be comfortable.

The amount of gear you carry depends on how far you have to carry it. Whenever possible, I take along my small propane-fueled heater. There is nothing more comforting on a cold winter night than a source of heat. Just the sight of its orange glow is soothing.

Don't forget a hand towel and extra gloves. Your hands are the part of your body that will give out first because they can't help but get wet. Your hands will get wet when you handle bait, which is the reason some winter walleye anglers use jigs instead, and they will get wet when you handle walleyes. Drying them quickly with a towel minimizes the bad effects of the cold water.

I should point out that the best winter walleye fishing usually occurs during breaks in the wintry weather. Several nights of relatively warm temperatures can trigger hot fishing, though I do not know how air temperatures can affect walleyes underwater. More likely it is the accompanying lower barometric pressure. If you have any inclination to try nighttime winter walleye fishing, make every effort to get to the water in what might be described as balmy winter weather. Perhaps a light drizzle is falling. Or big snowflakes are falling straight to the ground.

One of my most pleasant winter night fishing excursions happened while silver dollar-sized snowflakes fell gently into the river. The air temperature was a moderate 31 degrees. A friend and I slid a small boat into the river just as the last light of a dark day was disappearing, and we motored upriver into a long, deep pool. For better than an hour, walleyes, every one at least 5 pounds, struck on every cast.

Pennsylvania angler Charlie Brant lands a nice walleye. Walleyes tend to be bigger in the winter than in the summer.

photo-Mike Bleech

Of course, once you become addicted to this sport, you'll go fishing in almost any weather. The allure, I guess, besides good walleye fishing, is having the water to yourself.

Tackle

Tackle needs for winter walleye fishing are quite simple. Two or three different sizes of hooks, medium-size splitshot, a few larger sinkers in case long casts are necessary, a few sizes of jig heads and an assortment of plastic jig bodies are all the terminal rigs I generally carry when I fish from shore. In a boat I might take more just because it is no bother, but nothing else is really necessary.

Other essentials include a small flashlight, a landing net, a rope stringer and a bait bucket.

During winter more than any other time, it is important to be well-prepared. But as always, the real key to success is locating the fish. In this regard, winter fishing offers another advantage. Once you find walleyes, you should be able to stay with them all winter, if your walleyes do not get fished out. Winter patterns tend to last all winter long.

One of the greatest obstacles can be finding suitable open water. In cold water, walleyes usually seek mild current, often adjacent to swifter current. Throughout most of the walleye range, calm water freezes, at least during the coldest weather. Some of the more popular winter walleye water is below dams. Water flowing through dams is just a bit warmer than it would be if the dams were not there. In some areas, the only time you can fish open water during mid-winter is after thaws have raised the river level, breaking up the ice.

Dam tailwaters are excellent winter walleye areas for more reasons than the fact that they're open water. Dams stop upstream movements of all fish, which tends to congregate fish in the tailwaters. Small fish passing through the gates of dams, which kill or stun them, provide an abundant food supply.

While winter walleye anglers sometimes congregate immediately below dams, sometimes fishing is better farther downriver. Walleyes, and some other game fish, make generally upriver movements during fall. When they are blocked by a dam, some remain in the immediate tailwaters, but others drop back downstream. You can usually escape all fishing pressure by dropping into the second or third pool below a dam.

Tactics

Winter walleye fishing tactics can be very simple, though often frustrating. Most good walleye rivers and creeks have rocky bottoms that eat terminal rigs. And if you don't get your jig or bait close to the bottom, you won't catch many walleyes. Unlike walleyes that inhabit lakes, river walleyes are distinctly bottom-oriented.

It is hard to imagine anything better for winter walleyes than a live minnow. I am partial to shiners. Their flashy sides call to walleyes, and walleyes seem to like their taste. During summer, shiners are poor bait because keeping them alive in a bait bucket is difficult, and they do not last long on a hook. The problem is that they need plenty of oxygen, but warm water does not hold as much dissolved oxygen as cold water. In cold water they use less oxygen. So during winter, keeping them lively is no problem.

Results are the main reason to fish for walleyes at night in the winter!

photo-Mike Bleech

The simplest way to fish shiners is on a jig head, either plain or dressed. However, when walleyes are not very aggressive, they sometimes seem to object to the weight of the jig head, and sometimes you will get more action with the minnow a few inches off the bottom. Then use a fine-wire, wide-gap hook in size 6 for small shiners or size 4 for large ones. If I use larger suckers or stonerollers for bait, concentrating on larger walleyes, a size 2 hook is more appropriate. Either of these baits remains lively on the hook much longer than shiners.

Whether you use a jig head or pinch splitshot several inches above a plain hook, hook the minnows lightly through both lips. The usual way is to insert the hook through the lower jaw. But some anglers insert the hook through the upper lip so the minnow is held upside-down. They believe this makes the minnow struggle more.

A floating jig or some other type of bait floater will keep the bait a few inches above the bottom where it is easier for walleyes to spot. It also adds color that might be more visible to walleyes than just the minnow. But I have little faith that walleyes can distinguish color at night.

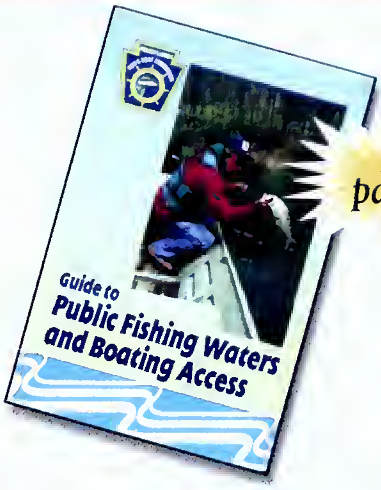
If you do not want to get your hands wet by using minnows as bait, try lead-head jigs dressed with soft-plastic bodies. During winter I prefer screw-tail bodies. However, there are great differences among screw-tail bodies. Some are made of plastic that is too stiff for winter fishing. Retrieves should be very slow, which is not fast enough to make the stiffer tails undulate. Pick your screw-tails carefully for this reason. Standard colors are white, yellow and chartreuse.

Perhaps it is a statement on my sanity, but walleye fishing at night during winter is one of my favorite sports. Give it a try. You will discover either a great way to catch big walleyes, or that I'm nuts. In either case, you will extend your open-water fishing season and avoid cabin fever. ◻

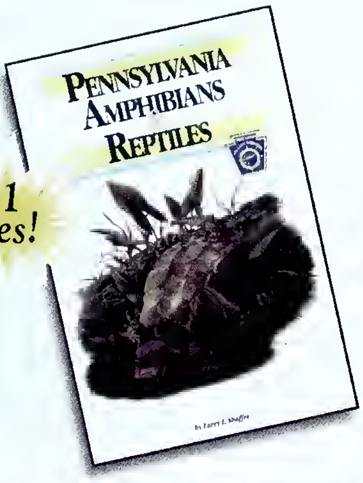
Products and Publications

Guide to Public Fishing Waters and Boating Access

This 96-page book, 5 $^1/_2$ x 8 $^1/_2$, lists by county the locations of Pennsylvania's public accesses with information on each access's services. Also listed are brief driving directions to each access. The book also lists Pennsylvania public fishing waters by county, including miles for flowing waters and acreage for impoundments and lakes, species available and nearest towns.



96 pages!



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Pennsylvania Amphibians & Reptiles

This 161-page, 5 $^1/_2$ x 8 $^1/_2$, full-color book lists Pennsylvania's salamanders, frogs, toads, turtles, lizards and snakes. Each animal's account includes details on general characteristics, identification, range, habitat, reproduction and food. Range maps and full-color illustrations and photographs help anyone identify each species.

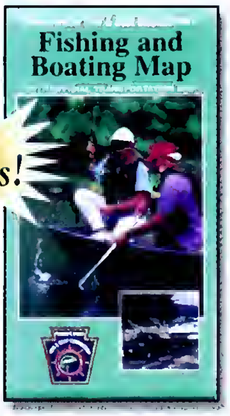
67+ species!

Endangered and Threatened Species of Pennsylvania

This book is 80 full-color pages and measures 8 $^1/_2$ x 11. The book includes details on Pennsylvania's endangered and threatened invertebrates, birds and mammals, fish, reptiles, amphibians and plants. The book was produced as a cooperative effort among the Fish & Boat Commission, Game Commission, DCNR Bureau of Forestry, and the Wild Resource Conservation Fund.

PFBC Fishing & Boating Map

The full-color folded map measures 37 inches x 22 $^3/_4$ inches flat. With the official Transportation Map, the map marks the locations of more than 900 fishing and boating accesses, lake and impoundment special-regulation areas, flowing water special-regulation areas, fish culture stations, universally accessible areas, Commission offices and pumpout stations.



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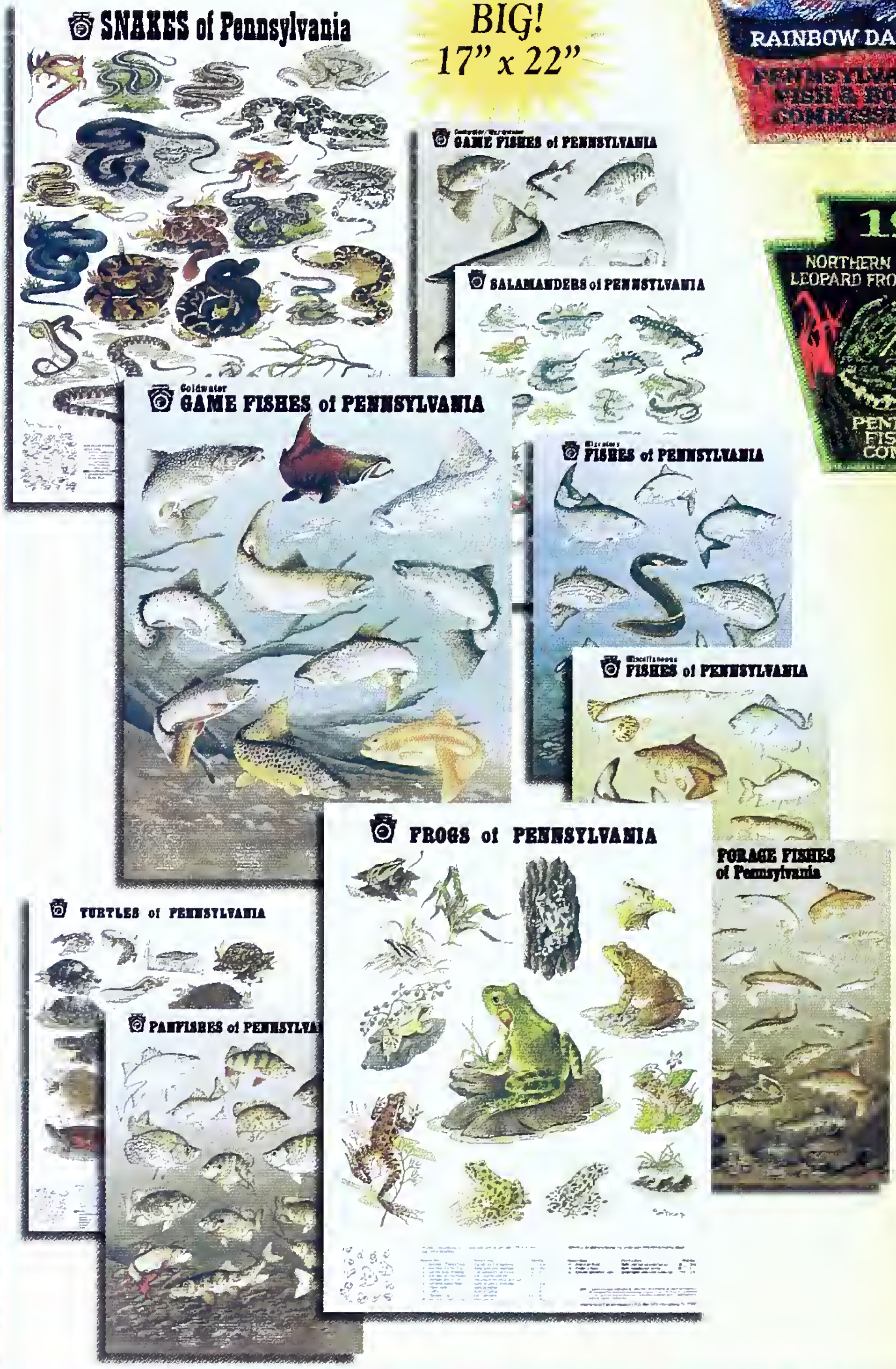
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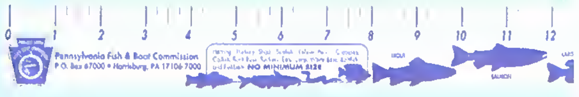

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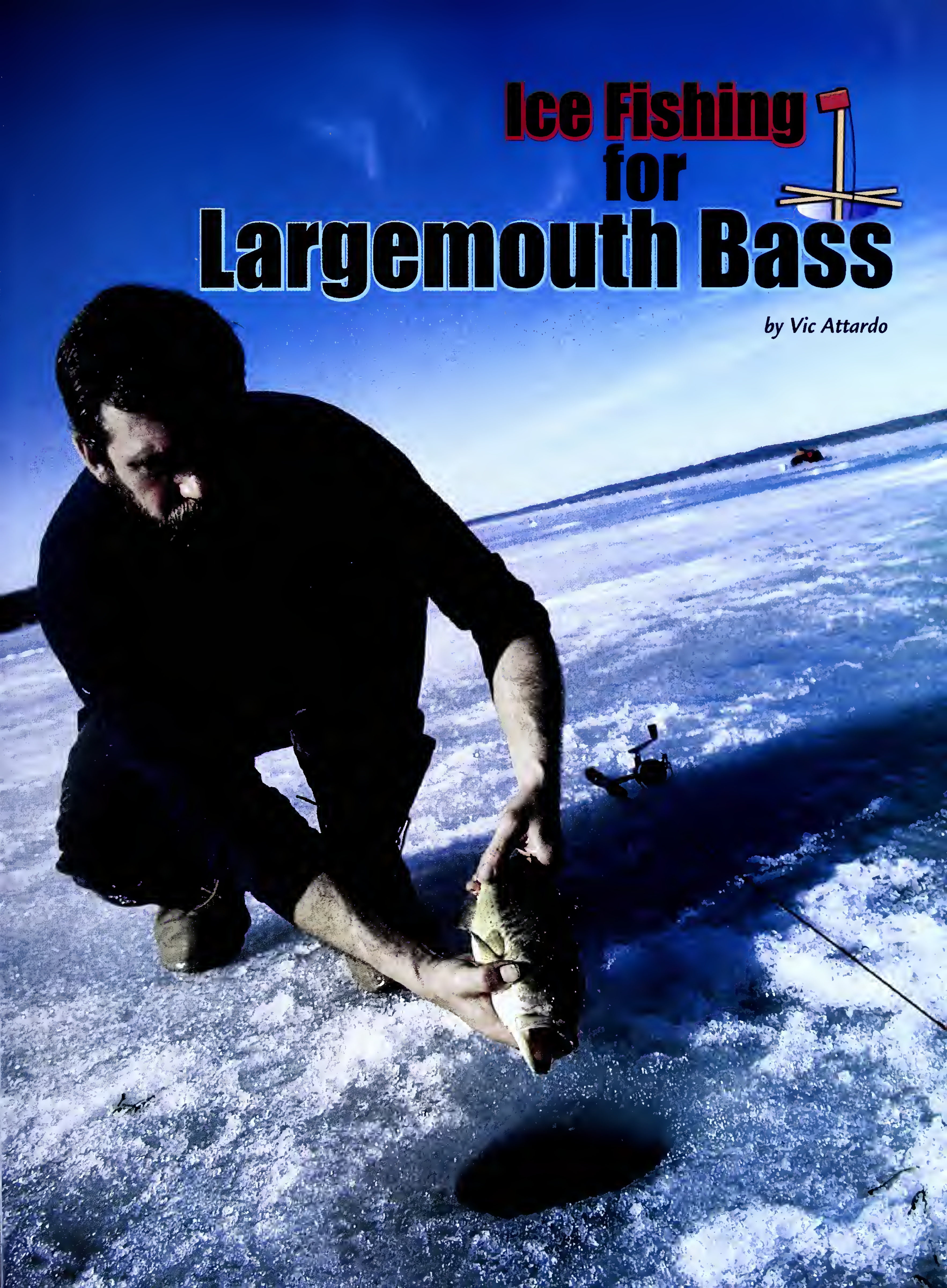
Ice Fishing for Largemouth Bass

by Vic Attardo



The Saturday morning fishing shows were full of people kissing bass. Outside my home, four inches of snow covered the ground and the backyard thermometer had only enough strength for the low teens. But on the TV, the weather was balmy and anglers were using surface lures to catch 3- to 5-pound largemouth bass. I couldn't stand it anymore.

"I'm going fishing," I told my better half. "How about some bass for dinner?"

Now my wife is not a master angler, but she's also no fool. She knows I catch largemouth bass from spring through fall. But the idea of landing bass in the dead of winter, when our region's lakes are covered with a thick plate of ice, sounded like a fish story to her. She told me I better deliver as promised, or else I'd be taking here out for Italian.

A lot of anglers think like my wife–that the idea of catching largemouths under the ice is unheard of. Sure, you can catch panfish and pickerel and even walleyes while standing on hard water, but largemouth bass? No way, no sir.

The fact is, largemouth bass are regularly caught by ice anglers, and not as an accidental catch. Using the right techniques anglers can have as good a day hooking bass as they would when the water temperature is summery. And as for size, the winter season produces some real beauties. Between a party of four anglers one wonderful day last January, we landed over 20 pounds of Pennsylvania bass, including a five and two four-pounders. In the right lake, at the right time, this feat can be duplicated.

Live-bait fishing

To catch iced-up bass, the first thing an angler must do is leave all his lures behind. This is live-bait fishing. Only a handful of accidental times have I caught bass while using the jigs I work for winter panfish.

The bottom line is that if you want to catch bass under the ice, you must use bait. And the only bait worth using is live shiners. Fathead minnows will catch some bass, but they are not consistent producers of big fish. When I use fatheads to catch pickerel, I pick up a few incidental largemouth bass. But to attract Mr. Bucketmouth, use a shiner. I like my winter shiners to be between three and five inches long.

To catch iced-up bass, the first thing an angler must do is leave all the lures behind. This is live-bait fishing, and the only bait worth using is live shiners.

photos-Vic Attardo

Ice Fishing for Largemouth Bass

photo-Vic Attardo

Rigs

There are two ways to rig a shiner, and my choice depends on my intentions. If I plan to release every bass I catch, I use a double-hook rig; if I intend to keep a big fish for the kitchen, I use a single hook rig.

Beginning this winter, new bass regulations permit keeping only bass of 15 inches in length from standing waters. While the regulations don't require the use of a particular rig, the fast strike, or trailer hook rig, may become a necessity. With this rig, the angler immediately sets the hook when he feels a bite. Using the popular single-hook rig, the angler allows the bass to run with the bait before setting the hook. With this technique not every bass will swallow the bait and hook, but it is common.

Quickset double-hook rigs are sold commercially, but it's easy to make a variation at home. The commercial product is made several ways. Two popular ones have adjustable double hooks, or else a unique double back-to-back hook. Some rigs have two treble hooks.

Each rig consists of two hooks connected either by wire or monofilament. With the reverse, back-to-back tine, insert the small shaft or shafts into the bait. With the double hooks, a small hook goes into the bait and the large hook is left exposed on the side of the shiner. The beauty of many of the commercially made rigs is their adjustability. The hooks can be slid on a metal sleeve to fit the size of the bait.

You can make your own fast-strike rigs by connecting two treble hooks through the eyes with either monofilament or wire. Using monofilament it's easy to make a rig on the ice by tying the trailer hook to the shaft of the lead hook. If you're not concerned that toothy critters may cut the line, this system works fine.

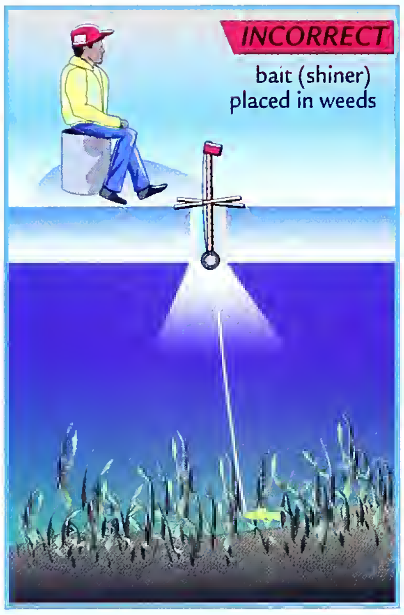
To rig the shiner with either the homemade or the commercial setup, simply place the hooks on one side of the bait. One hook should sit behind the gills and the second should rest before the tail. Be sure to place the hooks so that the bait lies flat. You don't want the shiner to bend and swim unnaturally.

Tip-ups, line

Both live bait rigs are fished beneath tip-ups. The choice of either wooden or metal tip-up does not matter as long as the spool that's suspended beneath the ice flows freely. A metal tip-up with a wind flange is a good aid. With this type, the breeze catches a small plate and automatically jigs the bait. Of course, you need a breeze, and not a strong wind, to make these work.

I spool my tip-ups with 14- to 20-pound black dacron line. To the dacron I connect a 6-foot leader of either clear or green 6- to 12-pound monofilament. The connection is made with either a small black barrel swivel or with two loops.

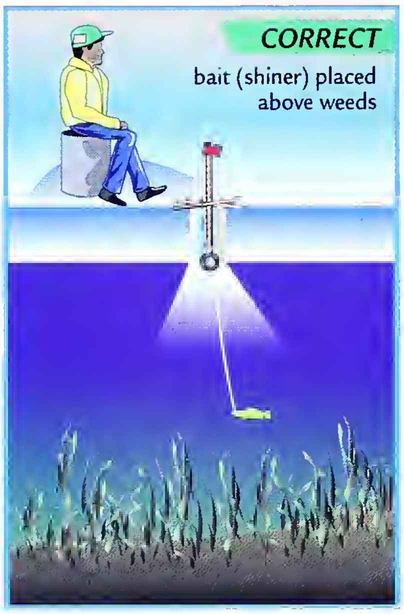
Fishing a single-hook rig, which I suspect most readers will use, takes a little skill and finesse. The shiner is hooked just behind the dorsal fin with the point going in one side and out the other. Be sure not to stab the shiner's spine, which could prematurely kill the bait.



When the shiner is rigged, it should dangle straight and level beneath the line.

With a single-hook rig, the angler must wait for the bass to take the bait, run with it, swallow the shiner, and then begin a second run. Ideally it happens this way: The angler, talking with his buddies and feeling warm in his insulated coveralls, sees a flag rise on a distinct tip-up. He runs across the ice, somehow managing not to fall. As he goes, he sees the glint of the revolving spool as it turns beneath the water. The excited angler reaches the tip-up, not the least out of breath, bends over, and gently lifts the wooden prongs from the water. The spool is still spinning but then it stops.

The experienced angler tells himself that either the bass has dropped the bait, which means the game is up, or else the fish has halted and is swallowing the shiner. If he's smart, the angler avoids the natural instinct of pulling or jiggling the line. But his keen senses tell him there is a feeling of weight down there.



Suddenly the dacron starts spinning off the spool again. Now is the time for the angler to react. He pulls hard on the line, setting the hook. The fish contests this interruption of his meal and the war is on. Hand over hand the angler begins retrieving the cold line. The big bass struggles beneath the table of ice. The angler continues to gather line until he sees the silhouette of the fish. He guides it to the opening. The mouth of the big fish appears on the surface and the angler, quickly removing his gloves if he hasn't already done so, grabs the bass by its jaw and lifts him into the cold.

And that's how it's done.

Underwater look

For a better understanding of why this technique was necessary, let's take a look underwater. The bass has probably come upon the shiner while cruising with another bass or in a small school. One fish is hungrier or more aggressive than the others, so he grabs the bait. The second instinct of this fish is to get his dinner away from other members of the school. The bass runs with the prey in its mouth until it feels safe enough to consume the food. The fish may have taken the shiner headfirst, or by a side attack, but it now must swallow the food headfirst. At this point, there are probably a few moments when the bass is shifting the shiner in its mouth. If the angler were to set the hook now, he may come up empty. But avoiding his school mates, the bass gets most of the meal in its mouth and he slowly swims off, gulping as he goes. It's then that the largemouths learns there's an activity called ice fishing.

Using a quick-set rig, the angler can strike as soon as he reaches the flagged tip-up. One of the two hooks in the rig usually enters the bass's mouth during its initial attack, so waiting for the fish to swallow the bait is unnecessary. But quick-set rigs are not foolproof (neither are single-hook rigs, for that matter). Plenty of times I've pulled on quick-strike rigs and come up empty.

Location, setting baits

One of the keys to catching iced-in bass is location. Even though it's the dead of winter, I try to find some fertile weed bed where I set my lines.

In winter, weeds may stay green in shallow areas where light can penetrate. Generally I find green weeds in depths of five to 12 feet. Underground springs can produce a good weedbed in the same depth range. The weed beds certainly aren't as thick as they are in summer, but the bass will still gravitate toward a sparse field to feed.

In setting baits, I like to keep them near the top of the weeds. A shiner lodged on the bottom in a tangle of decaying growth will not attract bass. But a shiner placed a foot or two above the vegetation will catch a bass's eye.

To set a bait at the right level consistently it's best to use some type of semi-permanent indicator on your line. I've seen anglers attach everything from a button to a twist tie onto their lines to achieve a consistent depth.

When you first drill a hole and drop the line, test the bottom by attaching a clip-on weight and lowering it to the bottom. Clip-on weights consisting of an alligator-type clip and an ounce or so of lead work well. They are readily available in tackle shops during ice fishing season. One ice-angling friend, Bob Jones of Birdsboro, keeps the alligator clip on his coverall lapel so he always knows where it is.

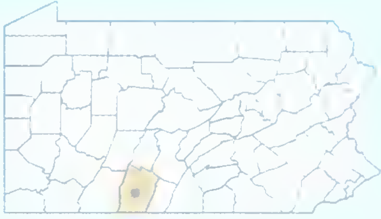
In setting the depth for your baits, lower the weight to the bottom, raise it to the desired level, and then attach a twist-tie to the line exactly where it enters the water. Remove the clip-on weight, and each time you lower the line to the twist-tie, it will be just where you want it.

Another good location for iced-up bass is in, or beside, a creek channel in a manmade impoundment. For this fishing, anglers set a string of tip-ups to intercept bass during their daily movements. You're not likely to find fresh weeds in these deep-water locations, so lay your baits tight to the bottom structure. This kind of fishing also requires the use of a sonar unit to help determine the contours of the creek channel and tell you where to set your shiners.

Perhaps hundreds of Pennsylvania lakes and ponds are potential ice hotspots for bass. In the end, I think the only thing that stops anglers from catching bass under the ice is the belief that it can't be done.

graphics-Ted Walke

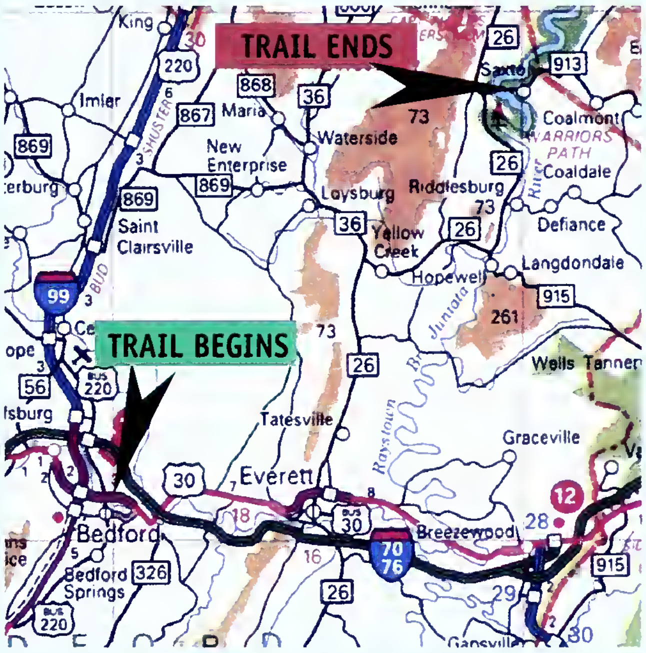
The Raystown Branch Juniata River Water Trail



by Craig Mayer

This article is the first in a series describing Pennsylvania's six newly designated official water trails. The Raystown Branch of the Juniata River meanders through rural Bedford County. The trail begins in historic Bedford and runs a tangled 55-mile easterly course to Saxton, Bedford County's northernmost settlement. Saxton was chosen as the eastern trailhead terminus because it marks the point at which powerboats begin to use the river as it forms Raystown Lake. Boating south of Saxton is almost exclusively confined to canoes, kayaks and rowboats. Motor use is limited to the occasional deep pool or high water conditions.

The trail itself is characterized by slow pools interrupted by fast but shallow riffles. It is a Class I water course, ideal for the novice canoeist. Today, along with its use as a municipal water supply, the river serves as one of the area's prime recreational resources, providing excellent smallmouth bass fishing and supporting summer vacation cottages and a growing canoe and kayak population. Historically, it was used by nearly every industry that flourished in the region and figured prominently in our colonial history.



Back in time

Starting in Bedford in front of the Fort Bedford Museum or just upstream at Old Bedford Village (both sites will have trailhead signs), one can get a firsthand look at the region's colonial history. To the east and about four miles downstream, the paddler passes the Juniata Woolen Mill at Lutzville. This mill was constructed in 1805 and is probably the first such mill built west of the Susquehanna River. The mill also sits at the site of Aliquippa's town–the Indian villages of the Shawnee or Delaware. The water trail then passes through Everett (formerly named "Bloody Run"), where paddlers might stop for refreshments. Pennsylvania's mid-state hiking trail, which runs generally along the Tussey Mountain Ridge, crosses the water trail at Everett.

From Everett, the trail continues east for seven miles until reaching Juniata Crossing (about one mile west of Breezewood on Route 30) and the historic Stone Lodge built there about 1812. Stone Lodge overnight guests included Abraham Lincoln, P.T. Barnum and Zachary Taylor. The Crossing, as it is known locally, is where English forces forded the river in cutting the Forbes Trail for the campaign against the French in 1757. Just downstream is an early 19th century three-story grist mill and the remains of a bridge pier used to support a chain suspension bridge built around 1800. On the eastern approaches to the pier, wagon tracks that have been worn into the rocks are clearly visible.

1800s

The river moves north through quiet farmlands, and it cuts deep and scenic cliffs on the way. Bald eagles have often been seen on the river between the Crossings and Saxton. When passing through the village of Cypher, about 17 miles downstream of the Crossings, stop to examine the masonry work in the old railroad bridge and trestle. It was built in 1861-63 to carry coal south and to transport passengers to the Bedford Springs Hotel. The Borough of Hopewell lies five miles farther downstream, where on weekends a paddler could stop and easily walk to the Keystone Foundry Museum. It was built in 1857 for the Huntingdon and Broad Top Railroad. Continuing along, next comes Riddlesburg, where coke ovens have been preserved. Three miles downstream is Warriors Path State Park, which lies astride the river. The Saxton trailhead terminus is located at VFW Park.

There are many more delights along the trail. Every year for the past 18 years, the Bloody Run Canoe Classic has been held on the river section between Bedford and Everett. It includes both recreational and competition-class boats. For the year 2000 race, the trail and rotary club race committees will use the race to inaugurate the new river trail.

Come join the festivities on Sunday, May 21, 2000.

Craig Mayer owns Adventure Marine Canoe and Kayak and is chairman of the Raystown Branch Juniata River Water Trail Committee.

SMART Angler's Notebook

by Rich Wood

Dobsonfly

Many people do not know what an adult dobsonfly looks like. However, many of those same people could easily identify the immature (larval) stage. It's called a hellgrammite. Dobsonflies belong to the order of insects called Megaloptera.

The fierce-looking, winged dobsonfly has a life cycle that lasts two to five years. They have complete metamorphosis. This is sometimes referred to as ELPA: Egg, Larva, Pupa, Adult. The larval stage, nicknamed a "hellgrammite," is the most familiar. These active critters are well-known by anglers and people who study aquatic life. Hellgrammites play an important role in the food chain. They are major underwater predators and are eaten by many species of fish. Dobsonflies are usually nocturnal.

Larvae

Hellgrammites are usually found in cool rivers and streams. They may also occur in lakes and ponds. They require good water quality with high amounts of dissolved oxygen. They live on the bottom and with strong legs cling to rocks and sticks. They can also swim easily forward or backward by wiggling their entire body. They may grow up to 5 inches in length. They have a strong set of mandibles (mouth parts) that can catch, hold and eat many aquatic insects and even small fish. These "pinchers" can grab anything that comes close to them, including unsuspecting fingers! Larvae breathe oxygen from the water through well-developed tufted gills on the abdomen. They may also live out of the water by using spiracles (breathing tubes) on the abdomen to breathe air. The larval stage may last one to three years.

Emergence

The larvae crawl out of the water and carefully choose a location. This site may be up to 50 feet from the water. Hellgrammites dig underground a few centimeters or may burrow under dead leaves, a rotten log or old tree stump. Here they change from larvae into pupae. The pupal stage may last from one to 14 days. Most dobsonflies in Pennsylvania emerge in spring and summer.

Adults

Adult dobsonflies live only a few days. They are large, weak fliers. Males have much longer mandibles than females. They use these "long jaws" to fight other males and grasp females for mating. Adults are eaten by many fish, birds and bats.

Mating

Using their long mandibles, males grab females around their wings. Mating usually takes place on the ground or on vegetation.

Eggs

Eggs are laid in masses, with many eggs in each mass. Females deposit their eggs out of the water. They may use bridge abutments, overhanging vegetation or rocks that stick out of the water. Hatching takes place at night as the new larvae drop into the water. Young larvae may hatch in a few days or may take up to two weeks.

There are about 50 different species of Megaloptera found in North America. This group includes dobsonflies, fishflies and alderflies.

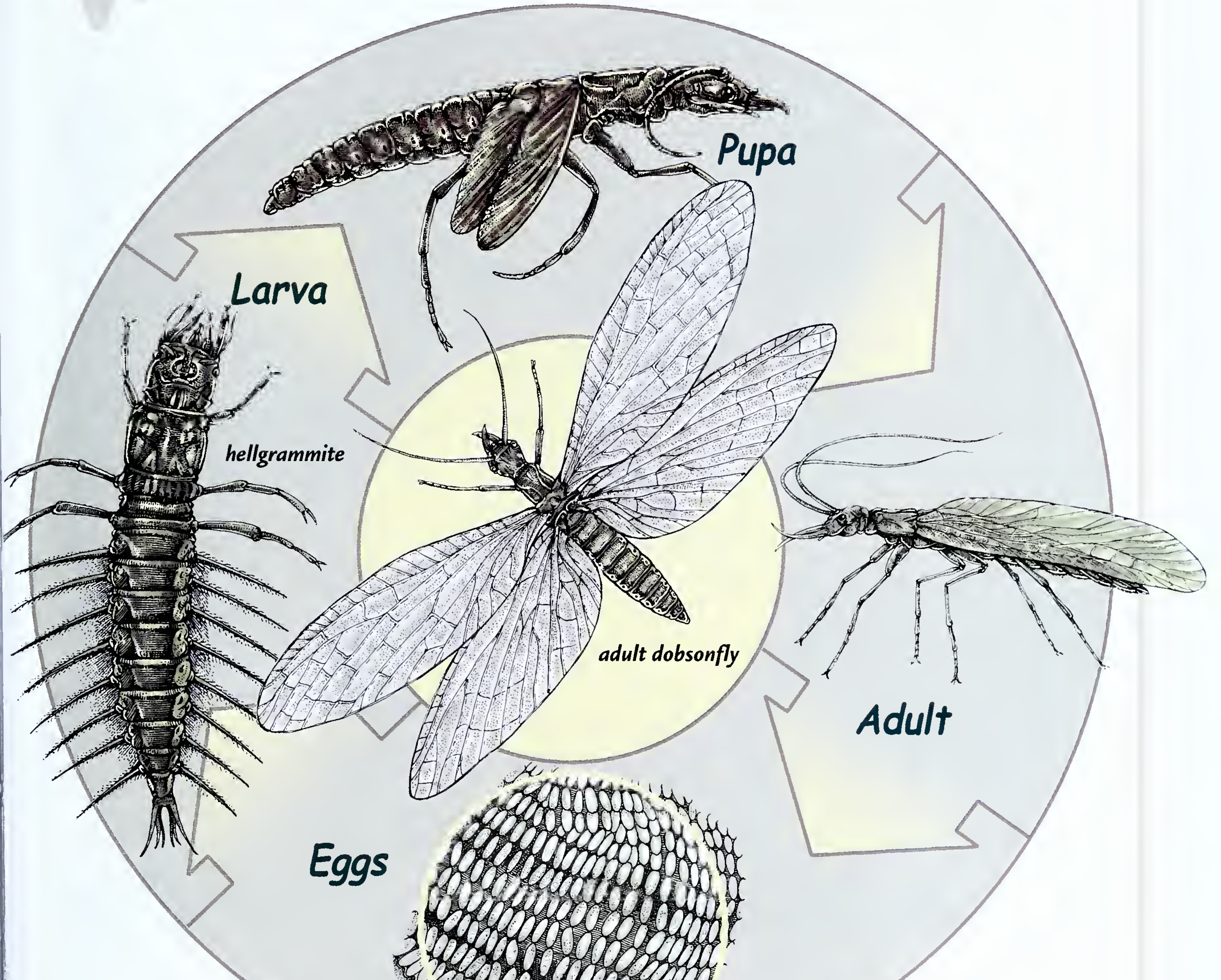


illustration- Ted Walke

The March Brown Nymph

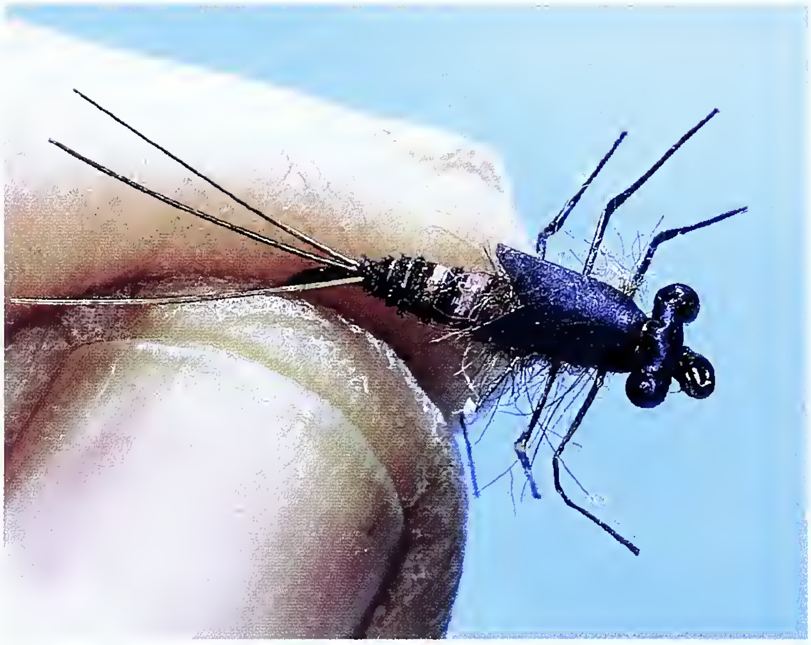
by Chauncy K. Lively

What's in a name? Dating back to the early days of fly fishing in England, many stream insects (and a few terrestrials, too) bore names reflecting the time of year they appeared. They included the stoneflies February Red and Early Brown. Then there were the mayflies March Brown, July Dun and August Dun. Even though most of these designations never reached U.S. shores, the name March Brown became well-known to American anglers.

In England, the mayfly known as the March Brown is identified by entomologists as *Rhithrogena haarupi*. In the early 1900s, when the dry fly arrived here from England, our anglers had not yet developed a working knowledge of the insects found in our streams. They chose to name them according to their similarities with the new English dry fly patterns. Thus, the mayfly we now know as *Stenonema vicarium* was called the March Brown because someone saw a resemblance between it (the natural) and the English fly pattern bearing that name.

This reverse-English approach was responsible for many other American mayfly designations, such as the Pale Evening Dun, Blue Dun, Blue-Winged Olive, and others. So although we have attached British names to many of our insects, the actual entomology differs on opposite sides of the Atlantic.

The American March Brown is of substantial size. Indeed, it is one of the largest members of the genus *Stenonema*. The dun has a prominently banded abdomen and its splotched wings angle rearward. Its two tails resemble fibers from wood duck breast feathers and the legs are barred in a manner typical of the genus. The March Brown dun is often mistaken for the dun of the Grey Fox, a close relative. However, the latter is both smaller and paler in coloration.



March Brown nymphs typically live under rocks in well-oxygenerated streams. Their distribution covers much of the eastern and mid-western U.S. and Canada. Like other stone-clinging nymphs in their habitat, they are flat-bodied, nature's way of providing streamlining protection against being swept away in heavy flow. Their prominent eyes suggest the term "bug-eyed" (no pun intended).

Our present March Brown Nymph pattern represents a slow evolution of changes over the past 45 years. Although its general appearance has changed little over time, the materials used in the updated version make it infinitely more durable than the original, described in the April 1969 *PA Angler*.

Originally, we used wood duck fibers for both the tails and knotted legs. The barred fibers presented a realistic appearance to these appendages, but the fragile material shortened the usable life of the nymph beyond practical consideration. For the tails I substituted the stripped ribs from three brown hackles. Hackle ribs are extremely rugged, and even though they may at times seem a little stiff, they soften as they absorb water in use.

For legs I now use three appropriate lengths of Kevlar$^{\text{tm}}$ thread, coated thinly with flexible cement to prevent fraying at the ends.

Originally, we used a single condor wing quill fiber to represent the nymph's segmented abdomen. However, the condor was subsequently declared an endangered species, and sensibly, sale of its feathers was prohibited. Turkey biots provide effective substitutes for condor quill. Although they are smaller than the latter, two biots may be wound together to cover the desired area.

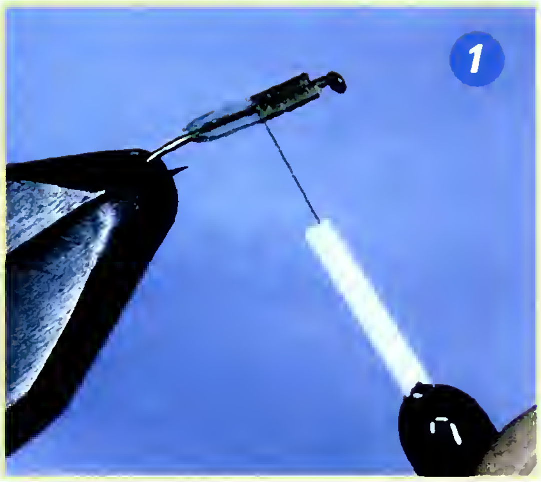
For years, nymph wing cases have been fashioned from feather quill sections, and many fly tiers continue to use them despite their frailties. Freshly dressed, quill presents a natural appearance but splits readily under sharp teeth. Following the lead from John Betts, the nation's leading proponent of synthetic fly materials, for this purpose I use a clear polystyrene sheet, cut to shape with scissors. This material is very durable and when lightly sanded on both sides until it is whitish, will retain tinting by a permanent marking pen.

For eyes in the original March Brown Nymph pattern I used chenille. However, heavy monofilament, as used by many fly dressers, is a superior choice. A half-inch length of monofilament is held at its middle with tweezers and heat is applied to each end with a match or lighter. This melts the material into a ball at the ends and the result resembles a miniature barbell. The shaped eyes accept tinting by a marking pen.

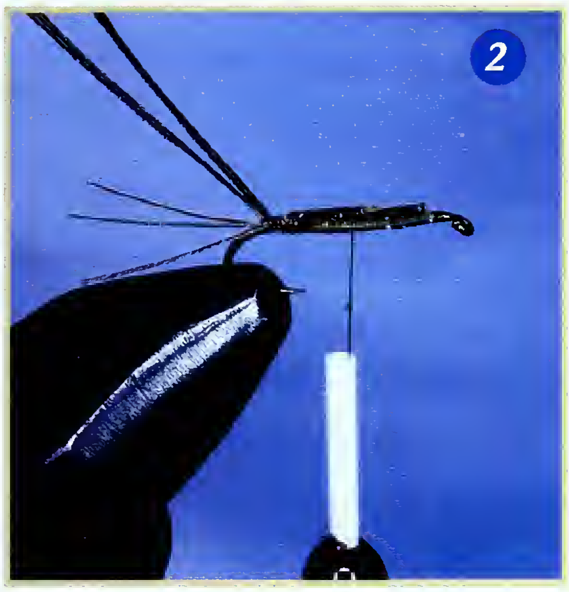
This dressing does not address additional weighting. However, if it is desired, cut a piece of flat, wrap-around lead the length of the thorax and bind it underneath the shank at the fore end of the underbody. Its position under the shank lowers the center of gravity and ensures that the nymph will swim upright, naturally.

Dressing: March Brown Nymph

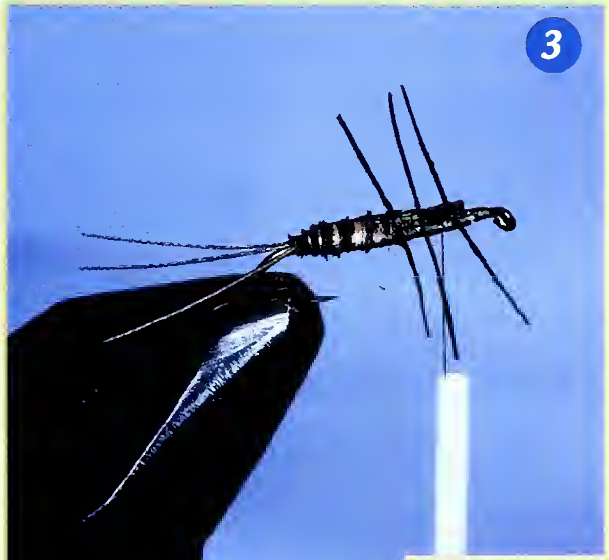
Hook:	Size 12, 3x or 4x long, normal wire.
Underbody:	Strips of .023" monofilament cemented to sides of the shank.
Thread:	Brown 6/0, prewaxed.
Tails:	Ribs from three brown hackle feathers.
Abdomen:	Two brown turkey biots.
Legs:	Brown Kevlar^{tm} thread.
Thorax:	Dubbing of medium-brown fur or synthetic.
Eyes:	Heavy monofilament.
Wing Case:	Plastic sheet, tinted dark-gray.



1. Form a flat underbody by cementing a strip of monofilament to each side of the shank. Taper the ends toward the bend. Tie in the thread behind the eye and wind closely to the bend.

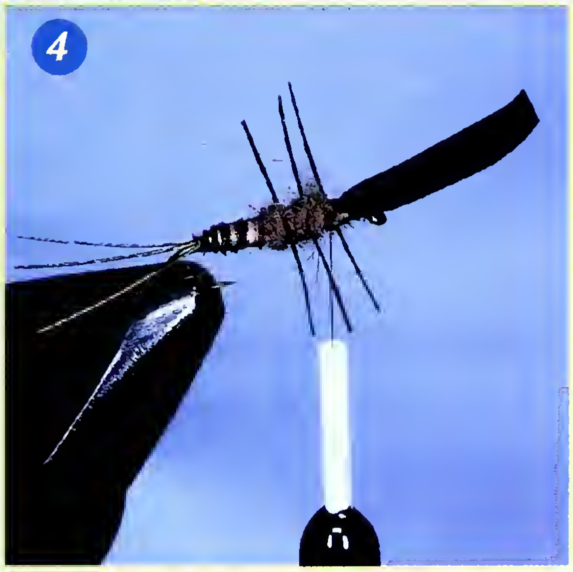


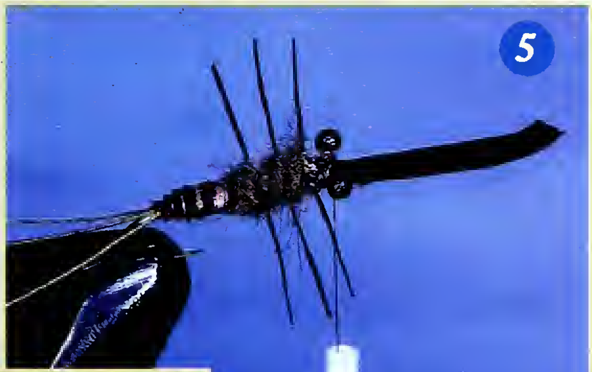
2. Strip the barbules from three hackles and tie in the ribs as tails at the bend. Wrap over the rib butts to the thorax position. Trim the excess and return the thread to the bend. Tie in the turkey biots by their tips.



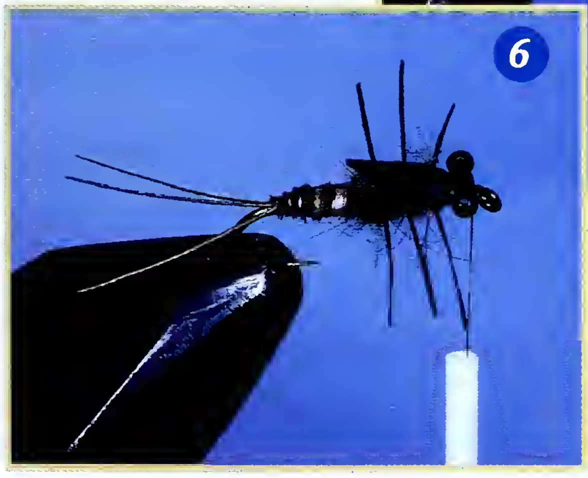
3. Coat the underbody with cement and wind over with the biots to the thorax position. For legs, tie in three lengths of Kevlar^{tm} thread. Coat the legs lightly with cement.

4. Wax a length of the working thread, apply dubbing, and wrap the thorax. Prepare the wing case material and cut off a strip of thorax width. Slightly taper one end and tie in the tapered end, as shown.





photos-Chauncy K. Lively

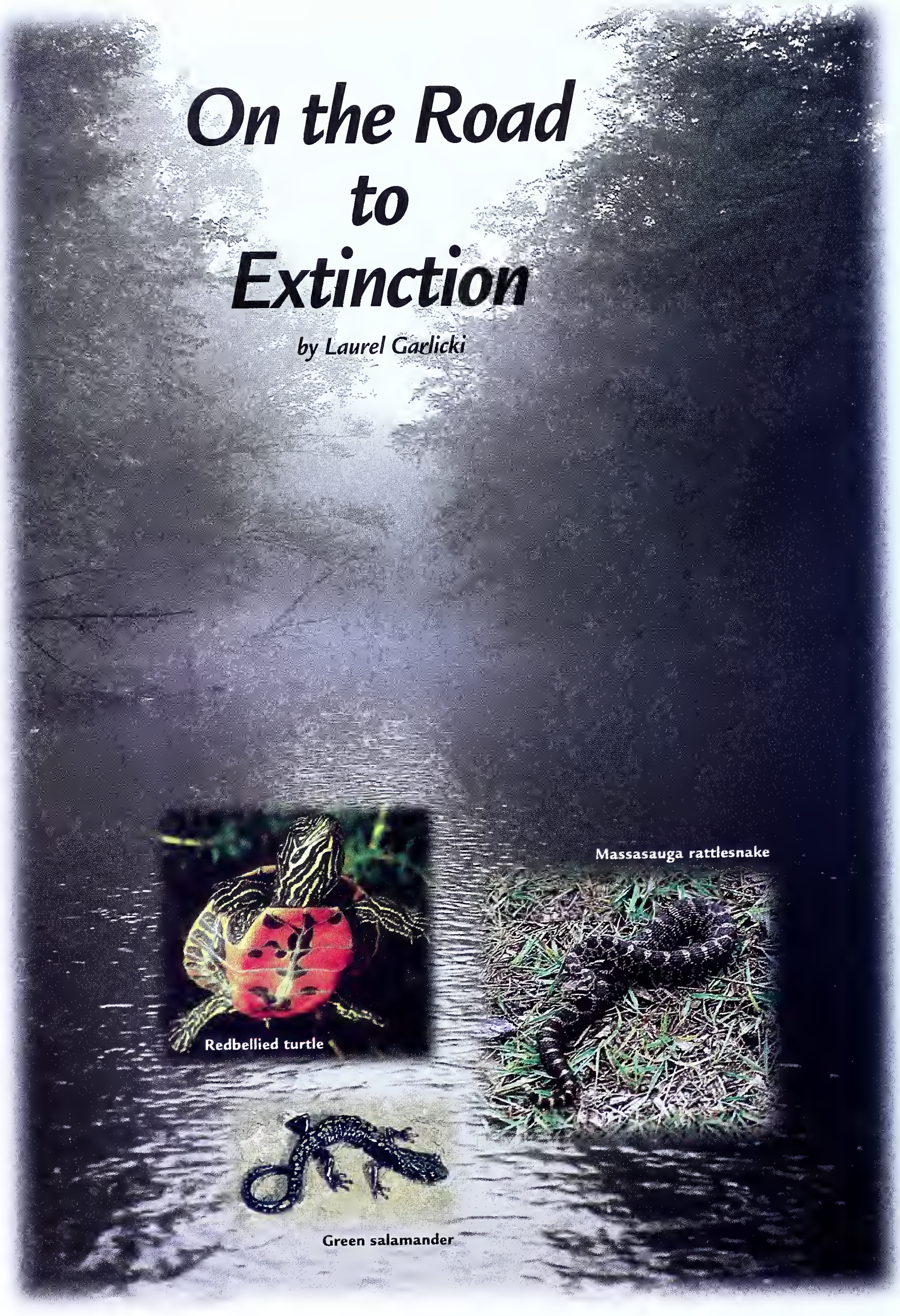


5. Prepare eyes of heavy monofilament and tie them in over the wing case wraps.

6. Pull the wing case back over the shaft between the eyes and bind down with two turns behind the eyes. Trim the wing case even with the rear case, even with the rear of the thorax, and cut a notch in the end. Optionally, bend joints in the legs with tweezers.

On the Road to Extinction

by Laurel Garlicki



Redbellied turtle

Massasauga rattlesnake

Green salamander

photos-redbellied turtle, Rob Criswell; massasauga rattlesnake, Andrew L. Shiels; green salamander, Russ Gettig; background photo-PFBC photo file

This article is the first in a series of articles on the major topics of concern in the Commission's theme, "Conserve 2000." This article explains the global, regional and local aspects of the theme of nongame and threatened and endangered reptiles and amphibians.

CONSERVE 2000
PROTECT PENNSYLVANIA'S WATERS

Throughout history, plants and animals have come and gone–it's all part of nature's grand plan. Extinction is a natural process that occurs because of changes in physical and biological conditions. Natural extinction happens at a very slow pace. However, because of human activities, plants and animals are pushed into extinction at an alarming rate.

A species that is no longer living is considered extinct. Extinction can happen even to the most common species in a relatively short period. Common examples are the dinosaurs and more recently, passenger pigeons. There is nothing that can be done once a species has become extinct. But there is plenty that can be done to prevent it from happening. Extinction is a global problem affecting not only plants and animals, but people as well.

Worldwide considerations

According to the National Wildlife Federation, the current rate of extinction is estimated to be thousands of times greater than the natural rate. Globally, this disrupts ecosystems everywhere. In some areas of the world, human activities are causing the extinction of species that haven't yet been discovered or even named. The Food and Agriculture Organization estimates that tropical rainforests, which are being destroyed at a rate of more than 38 million acres per year, may contain half of all living species in the world. Compare that to the fact that scientists have classified only 1.7 million organisms, a fraction of the 10 million to 100 million species estimated to inhabit the Earth. Currently worldwide about 19 species disappear every day.

The Earth is currently in danger of losing 1,446 species of plants and animals. Another 297 are considered threatened and may become endangered if they are not protected. Out of all the species in the world, 10 million to 100 million, these numbers may seem negligible. In most cases, we don't feel a direct connection to species when they become endangered or even extinct. That happens far away in different areas of the world. Chances are, it's a common feeling among people in the world. However, the connection may be disguised–by our medicine cabinets, for example. One of the biggest connections we have to the rich diversity of plants and animals living on this planet is the pharmaceutical industry. According to the National Wildlife Federation, many of the top 150 most prescribed drugs have their origins in nature or they are synthesized from nature. The health and jobs of many people of many nationalities rely on this $79 billion per year industry. But in the most ecologically rich areas of the world, species are being lost before we have a chance to realize their potential benefits.

Protecting America's species

Historically, people have moved across the globe from one area to another in search of natural resources and in hopes of improving their quality of life. Visions of lush for-

photo-Clark Shiffer

ENDANGERED

Bog turtle
New Jersey chorus frog
Coastal plain leopard frog
Massasauga rattlesnake
Kirtland's snake
Eastern mud salamander

THREATENED

Green salamander
Redbellied turtle
Rough green snake

CANDIDATE

Blandings turtle
Broad-headed skink
Timber rattlesnake

ests, pristine rivers, fertile land and abundant animal life drew people from Europe to America and westward from the 13 original colonies. But everywhere we settle we leave scars on the land, some that may never heal. In fact, since the Pilgrims landed on Plymouth Rock in 1620, it's been estimated by the U.S. Fish & Wildlife Service that more than 500 species have been forced into extinction in America alone.

Recognizing the importance of keeping each part of the ecosystem intact, Congress passed the Endangered Species Act (ESA) of 1973. The ESA provides protection for more than 900 animal and plant species in the United States that are in trouble. The ESA provides stiff penalties across state borders for these species. According to the U.S. Fish & Wildlife Service, the ESA is the most far-reaching law ever enacted by any nation for the preservation of endangered species. The Act states that endangered and threatened species "are of aesthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people."

Protecting PA's reptiles and amphibians

In 1974 and 1978, what is now the PA Fish & Boat Commission received jurisdiction over Pennsylvania's amphibians and reptiles, including those species considered to be endangered, threatened or of other special concern. Under state and federal regulations, it is unlawful to sell, trade, barter, possess, import, export, catch, take or kill animals on the threatened and endangered species list. Currently there are 12 reptile and amphibian species of special concern in Pennsylvania (as classified by the Commission): Six endangered, three threatened and three candidate. Species listed by the state are protected in the state. Species can receive better protection when they are also federally listed through the Endangered Species Act. If a species appears on the federal list, it is automatically added to the appropriate state lists.

Terms of endangerment

Endangered is a classification given to species that are in immediate danger of becoming extinct. In Pennsylvania, the eastern massasauga rattlesnake has been classified as an endangered species because of loss of habitat. The massasauga has a very limited range in Pennsylvania. Pennsylvania is losing critical wetland habitat in that range, causing the small, venomous rattlesnake's numbers to dwindle. Without protection, the massasauga is in danger of becoming extinct.

Species that are classified as **threatened** may become endangered in the near future if they are not protected. A special effort is made to monitor populations and habitats of species listed as threatened.

Redbellied turtles, a threatened species, have a limited range in Pennsylvania. They inhabit a heavily urbanized and industrial part of the state–the southeast region. Annual monitoring and review of proposed development is helping to protect this turtle's populations. Protection and recovery of some threatened species, when their populations rebound, can result in an upgrade to the less severe status of threatened. However, these species still need to be protected to ensure that their populations continue to grow.

Candidate is a term used in Pennsylvania to classify a species that could become endangered or threatened. Listing a species as candidate offers it some protection in the hopes that its population will stabilize and/or increase. Amphibians and reptiles that are listed as candidate species in Pennsylvania have no open season. The only exception is the timber rattlesnake found mostly in central Pennsylvania. In an effort to monitor its population and restrict harvest, special permits are required to hunt, take, catch, kill or even possess these snakes. Species may be listed as candidate species before they receive the unwanted distinction of becoming threatened or endangered.

Some species use Pennsylvania only as part of their range. When this kind of species becomes extinct only in Pennsylvania and not throughout the rest of its range, it is considered **extirpated** from PA. The mud turtle is an example of a reptile that has disappeared from Pennsylvania but can be found in other parts of its range. Unlike the popular elk success story, there have been no successful reintroductions of amphibians or reptiles into Pennsylvania. Reptiles and amphibians are difficult to reintroduce into habitats. The effects of a successful reintroduction may not be seen for a dozen or more years.

Slimy snakes, creepy lizards and warty toads often make people cringe. Most of our feelings about critters are based on fiction instead of fact. This is particularly damaging for the not-so-popular amphibians and reptiles. No matter how unpopular a critter might be, each is an integral part of the web of life, which also includes people. Removal of one part of the web can trigger a chain reaction, causing problems in other parts of the web. Furthermore, many of these animals are very sensitive and act as a barometer of environmental health. Their presence, disappearance and health are silent sentinels, alerting us that something might be wrong.

What's wrong?

The main reason why plants and animals become threatened, endangered or extinct is habitat loss. This is especially true for PA's amphibians and reptiles. They rely on wetlands for all or part of their lives. The Commonwealth has lost over half of its original wetlands. Statewide, wetlands have been drained, developed, polluted, taken over by non-native species or altered in some other way. At the same time, amphibian and reptile numbers have plummeted.

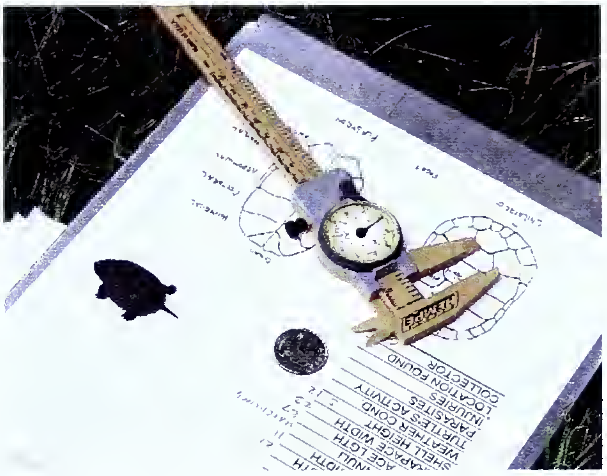
The timid massasauga rattlesnake of western PA relies on a very specific habitat–prairie-type fields and wet meadows. Fortunately, some of the massasauga's prime habitat is protected as state parks and game lands. Wildlife management strategies in these areas include precautions to help protect the massasauga and its distinctive habitat.

An increase in highway construction and traffic use on older roads has also taken its toll on amphibians and reptiles. Many amphibian species risk their lives crossing roads in early spring to reach their ancestral breeding grounds. Many become road fatalities seldom noticed by humans.

photo-Andrew L. Shiels

Acid precipitation, ultraviolet radiation, pesticides, herbicides and other chemicals have been blamed for the decline in amphibians and reptiles not just in PA, but around the globe. Some people believe the root of the problem is our lack of knowledge. Many people are not aware of the plight of these animals. Even more are not aware of the effects of their actions on the environment.

What's being done?



The Fish & Boat Commission is actively involved in permit review and research across the state. Research is needed to locate threatened and endangered species populations and to verify reports of sightings. Research also helps our biologists determine what might be the cause of a particular population's decline. It is also a key ingredient in conducting permit reviews for proposed highways, bridges, business expansions and other similar activities. Recommendations are made to help avoid or minimize effects on threatened and endangered species in the area. In this way, the Commission acts as a watchdog over other agencies and organizations proposing development in Pennsylvania.

Education is also a key component in protecting endangered and threatened species. Many publications, videos and Internet sites provide invaluable information for the public on endangered and threatened species in Pennsylvania as well as worldwide.

What can you do?

Too often it seems that we don't have any connection to endangered and threatened species–that what we do doesn't matter. The problem is that too many people with that outlook can have a devastating effect on solutions for these critters. One way to begin to help these endangered and threatened species is to become aware of the ones in your area. Often, as we pass complete strangers on the sidewalk, we don't have much concern for them. We don't know (and often don't care) what might be happening in their lives and what problems they might be having. However, as we meet new people and get to know them, we feel more concern toward them. We are interested in what is happening in their lives and want to know how we can help. As you learn more about the habits and natural history of endangered and threatened species, you might become more interested in what is happening to them and what you can do to help them. Share this information with others in your area to help dispel myths and rumors they might believe.

Bog turtles in the eastern part of the state have benefitted from this increased public knowledge. People are reporting new information to the Commission every week, tipping off our biologists to new bog turtle populations. The locations of these populations are recorded on a map that is consulted when development permits are submitted to the Commission for review. Our biologists recommend changes in the permits to help alleviate problems for bog turtles. These bog turtle populations can then be studied and monitored.

Many people are beginning to recognize the importance of getting involved in their local land use and planning decisions. Become involved and voice your concerns. Responsible land use has a direct effect on protecting habitats and water quality. Learn about your community's effects on the watershed you live in, both positive and negative. Promote the positive and see what can be done to minimize the negative.

Help protect habitat for threatened and endangered critters and other animals by participating in clean-up days. Another common activity is planting trees in parks, along streams and at schools. When organizing these planting activities be sure to choose native trees and plants that won't compete with other plants in the area and that provide benefits to wildlife.

Public involvement, in the form of participation, cooperation and funding, is a key to solving the problems facing threatened and endangered species. It will take a continuing effort from all of us to protect our common wealth. We can preserve for us and for future generations the rich legacy that inspired the writings of William Penn upon discovery of what is now Pennsylvania: "The air is sweet and clear, and the heavens serene... Of living creatures, fish, fowl and the beasts of the wood, here are diverse sorts..."

Resources for Threatened and Endangered Reptiles and Amphibians

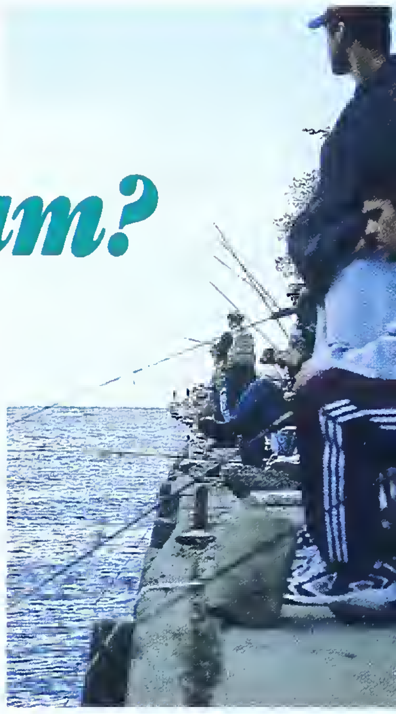
Contact the PA Fish & Boat Commission, Educational Media Section, at P.O. Box 67000, Harrisburg, PA 17106-7000, for a list of resources. These include wall charts, 17 inches by 22 inches in full color, on Pennsylvania's snakes, frogs, turtles and salamanders. The Commission also publishes the 160-page book *Pennsylvania Amphibians and Reptiles*. Also available is the 80-page book *Endangered and Threatened Species of Pennsylvania*. For additional resources, suggestions and links, visit the Commission on the World Wide Web at **www.fish.state.pa.us**.

Available from the Wild Resource Conservation Fund is the poster "Turtles of Pennsylvania." The Fund also has available the video "Living on the Edge: Bog Turtles," a bog turtle patch and more. Contact the Wild Resources Conservation Fund at P.O. Box 8764, Harrisburg, PA 17105-8764. The fund's web site is: **www.dcnr.state.pa.us/wrcf**.

Two other information sources include: U.S. Fish & Wildlife Service, PA Field Office, 315 South Allen Street, Suite 322, State College, PA 16801, web site: **www.fws.gov**; and the National Wildlife Federation, 8925 Leesburg Pike, Vienna, VA 22184, web site: www.nwf.org.–*LG*.

What if You Could Design the Perfect Steelhead Stream?

by Mike Bleech



Bob Sever, visiting from Pittsburgh, was so impressed that on the spot he donated $20 to the Pennsylvania Steelhead Association. "You really couldn't fish the creek here," he said. "It was too shallow and wouldn't hold anything." Like most anglers, Sever, who has been coming to the Lake Erie Coast to fish for about 20 years, normally fished Walnut Creek above the Manchester Bridge until the land was posted.

Each year, beginning by early October and continuing through the following April, steelhead migrate into the Lake Erie tributaries where thousands of anglers, many of whom have traveled hundreds of miles, await their arrival. Access to the streams is a problem, though. At Walnut Creek, there had been no good holding water between the boat basin and the upper end of Commission property just below the Manchester Bridge. Steelhead anglers had to crowd into the boat channel, where they were in constant conflict with heavy boat traffic, or they fished above the Manchester Bridge on private property, where there are several excellent holes that hold steelhead.

Unfortunately, the stream is now posted above the Manchester Bridge. Early in 1999, the Commission met with the Pennsylvania Steelhead Association, 3-C-U and other clubs to discuss the issue. Fish & Boat Commissioner Sam Concilla proposed making holes on Commission property to replace the fishing that was lost to the posted area.

"The motivation for the idea was the complaints we were getting from the private landowners that there were too many fishermen on their properties. To avoid further posting of stream access properties, I wanted a way to provide opportunities for the anglers to fish on public land. The greatest strip of public land is Walnut Creek from the Manchester Bridge to the lake," Concilla explained. "It just made sense that we should undertake a stream enhancement project to hold as many fish in that area as we possibly could instead of having fish travel upstream to private land."

But a project of this nature had no precedence. It went far beyond the usual procedures and plans for stream improvement projects in Pennsylvania.

"I pulled it out of the air," Concilla said. "It made sense to make holes."

The idea was enthusiastically accepted, and in an amazingly short time, the Commission, the Department of Conservation and Natural Resources, the U.S. Fish & Wildlife Service, anglers' clubs and local businesses worked together to complete the project in time for the steelhead run last fall. It was completed mostly during the week of August 30 to September 3.

Low water during construction benefitted the project. The Pennsylvania Steelhead Association will assist in seeding the stream bank after construction is completed. This project was possible because of cooperation among the Commission, other government agencies, private groups and local businesses.

construction photos-Mike Bleech, fishing photo-Keith Edwards

An application was made for a federal grant to fund the project. When that failed, the Commission found $9,999 for the project, and the partnership came up with $1,500. However, this was still not enough.

"We put the word out for contributors, and the money just poured in," said WCO John Bowser, who worked with Concilla to organize support. To support the project, along with the principal private group sponsor, the Pennsylvania Steelhead Association, 3-C-U, the Elk Valley Sportsmen Club and S.O.N.S. of Lake Erie joined with local businesses including Elk Creek Sports Store, Poor Richard's Bait & Tackle, B.A.C. Bait & Tackle, Lake Shore Service Gulf Station, Teresa's Lakeshore Ice Cream & Deli, Chivers' Construction Company, Industrial Sales and Manufacturing Company, and Erienet.

"I really have to thank the contractor, Dave Chivers, for committing his men and material for what he did," Concilla said.

According to Concilla, the contractor performed a job that should have cost about four times as much as he was paid.

"We're really excited about all of this," said Karl Weixlmann, president of the Pennsylvania Steelhead Association. "I look at this as a great community effort, everybody pulling together for a common cause."

The Pennsylvania Steelhead Association was formed about four years ago to protect, preserve and enhance the steelhead fishery. It now has more than 100 members, many from the Pittsburgh area. They contributed money and manpower.

The project was designed by the U.S. Fish & Wildlife Service. Five holes were created by heavy equipment, which chiseled into the shale stream bed. The maximum depth in these holes was about five feet. The entire project area was carefully designed with several boulders placed to create pocket water between the larger holes.

The result was 1,100 feet of virtually perfect steelhead stream, and anglers quickly voiced their approval.

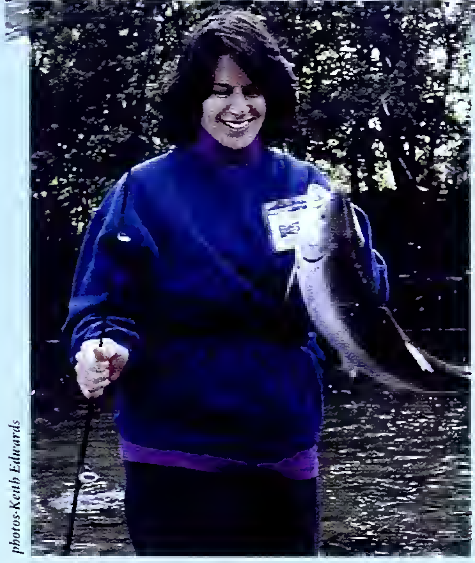
"I've heard nothing but compliments about it," reported Sherry Mishik, secretary at the Commission's Walnut Creek Access office.

Finishing touches such as building trails, seeding for stream bank stabilization, and planting trees for shade will be done by the Pennsylvania Steelhead Association.

Big pools, big catches.

Roy and Diane Java, Aliquippa, PA

Ken Schroch, Pittsburgh, PA


Kathy Day, Gardners, PA

Walter Peak, Pittsburgh, PA

Al Bargiband, Zelienople, PA

photos-Keith Edwards

Why I Keep Score

by Mark A. Nale

"Did you catch any?" "How are they biting?"

Almost every angler asks another angler these questions when they meet along a waterway. Apart from a way of making conversation, the asker really wants to know how many fish the other angler caught. Next comes, "How big were they?" or "What did you catch them on?" To answer these questions truthfully, the angler would have to keep a mental note of his or her fishing success, or in other words, the angler would have to keep score.

Keeping score while fishing seems to have fallen on hard times with a certain segment of anglers and the angling press. Some think that if you count or even measure the fish you catch, it somehow makes you less of an angler, or at least places you a notch or two below those who don't count or measure fish. I'm glad that it's still OK for an archer to count antler points or a hunter to weigh a bear. However, in some people's minds, "fish counters" are on a lower plane.

I'll start by saying loudly and clearly, with no apologies, "I keep score!" I think that keeping score is natural, important and often necessary, and I know that it adds enjoyment to my fishing.

My defense could begin by stating that some anglers don't count beans because they don't have many to count. I believe there is a certain amount of truth to that statement. When I caught only one or two trout an outing, there was no need to keep score. Some anglers may not need or wish to keep score, and that's fine, but let's not put down people who do. Aren't we all on the stream and lakes trying to have fun? If an angler is polite, and fishes legally, isn't it best to let each have fun in his or her own way?

When I meet another angler, I genuinely like to know how many, what kind, how big, what they were caught on, were they in the riffles or pools, and so forth. I believe that most others do, too. If the teller is in a sharing mood, I'll be a "sponge" and learn from the exchange. A useless answer would certainly be, "I don't know, because I don't keep score."

Keeping score is American! If you turn on the TV in the middle of a game, don't you want to know the score? Don't we read the sports page or watch cable sports channels to learn who threw for the most yards, who has the best batting average, and who has the most rebounds? When we play games or sports, we keep score. The last time I checked, fishing was still a sport.

Scores can determine winners and losers. Maybe that is what bothers some people. A score is kept in a bass tournament, and there are winners and losers. But I don't keep score to win or lose. My fishing is about fun, not winning or losing.

I keep score because for me it's fun, and a detailed "score" (my angling journal) has provided me with a wealth of information over the years. Here is a summary of an entry from my records:

"**July 3, 1990.** I caught 15 trout (5 stocked and 10 wild) on Bedford County's Yellow Creek. The largest was a 12 ½-inch brown, the smallest, a 6 ½-incher. Their average was 9.8 inches. All fell victim to a copper spinner. The slightly off-color water was 66 degrees. My father was with me. I had 4-pound line on my spinning reel."

I had fun that day, a good outing with my dad, and I relived that day, just now, by looking at my journal, or "score card," as some would call it. My written records just add to my enjoyment one more time.

My detailed fishing journal is an invaluable tool not only for me as an angler trying to improve my skills, but also as an outdoor writer attempting to convey correct and worthwhile information to readers.

I've learned much about trout fishing by analyzing my records. Among other things, I've learned that clear water is much more productive for catching trout on spinners than cloudy water. I've learned the best water temperatures. I know which streams usually produce the most, and largest, wild trout. My records also tell me where I'll likely find stocked trout in the middle of the summer. Keeping a detailed score has helped me dispel many trout fishing myths, and it has certainly helped increase my catch.

Aside from my personal reasons, if you are going to harvest any fish to eat, you'd better keep score. The law requires it! You better know the species, length and how many are in your livewell or creel. "I don't keep score..." just won't cut it when you're checked by a WCO.

On a final note, I have never met an angler or outdoor writer who didn't keep a score of some type, although I've read about, or talked to, many who claim not to "count their beans." They may announce that they don't even keep track of the number of fish that they catch. Nevertheless, in another article or column, or in a later conversation, I'll hear or read about the day they caught three browns all over 18 inches long on a tiny fly, or the 8-pound largemouth that was enticed from the lily pads with a weedless lizard.

I just smile to myself and wonder, "Isn't that keeping score?"

photo-Mark A. Nale

Training a Fishing Partner

by Samuel Shiels

I have trained a couple of excellent fishing partners over the years. Initially, I knew the background of both individuals. I was acquainted with their mother and father. The choice was simple because other family members fished. Both of these future partners were good readers at an early age. I provided many outdoor magazines for them to read. I would take them on alternate fishing trips from the age of 2 years. Little fishermen need your undivided attention–you don't want them to get hurt.

Having their own rods at age 2 was a big help. On rainy days they could cast in the house for practice. By age 5, they knew many species of fish, both fresh and salt water. The oldest would look in the fish buckets on the docks in New Jersey and tell the fishermen, "Mister, you have some very little fish in the bucket." It was not long before a lot of people covered their buckets when they saw him coming along the dock. In fresh water, we went to places where they could catch sunnies. Both of these guys wanted *action*. It takes action to keep their attention up.

At age 5 years, the eldest went trout fishing with me. At age 7 he caught his first striped bass–I was in my early 30s before catching one. When he turned 8, the younger one wanted to tie flies. Back to the reading again. He got a vise and materials and he was off and running. His mother was more involved–he now needed transportation to faraway stores to get things she never heard of. He needed moose mane, peacock herl and feathers!

Things moved along and we fished together every weekend and on vacations. By the time they were 10 years old, they knew what good equipment was. I provided everything. They had rods, reels, hooks, lines, boots, lures and vests. Both of these guys were now serious about fishing. They were able to tie their own knots and snell hooks for me. They would tell me what was the latest in lures and techniques. They were always told, "If you are not catching fish, try something different. Watch another fisherman–it can be a very simple difference, and every day you should learn something."

One rule that stood fast was that you have to do well in school, because poor students didn't fish. A good report card got them a very good rod of their choice. They were better equipped than I at their age!

My partners were on the fast track. Time was flying. They were now able to drive and were off to places I had never seen. They would come back with some amazing fish stories. I was even convinced I should go with them. The students started me in ice fishing, salmon and steelhead fishing, and tying flies.

Many hours have been spent in 37 years of fishing with my two fishing partners. I think the effort has paid off. Both partners are training new ones of their own, having started them at age 2. My father started me at age 2, also.

During this whole process, I missed out on the following: Having a problem with drugs, having to spend days or weeks in courts, or being called by the police to go to the police station.

The best benefit to me is when these two guys call and say, "Dad, how about going fishing with me?" So there I go having a good time and usually learning something.

Picking partners is important–don't put it off! ⛉

Above, three generations of anglers in the Shiels family gather in 1969 around a nice-sized striped bass. Left to right are Andy Shiels (age 6), Jeffrey Shiels (age 9), Samuel Shiels Sr., and Samuel Shiels Jr. (the author). At left, the author with son Andy in 1992 with Elk Creek steelhead catches.

photos courtesy of the author

Above, opening day of the 1999 trout season, Bald Eagle Creek. (From left) Roxanne Shiels, her husband Andy, and their 2-year-old daughter, Meghan. At left, Lauren Shiels, age 5, and Jessica Shiels, age 9 (daughters of Jeffrey Shiels), on opening day in 1996.

Notes from the Streams

Sign of the future?

As we all know, the winter of 1997-98 was mild and free of snow. In my area we had temperatures in the 70s in late March and early April. While patrolling one of my stocked trout streams in early April, I was shocked to find a group of young people swimming in a pretty good-sized stream pool. Was this a sign of future weather? I guess we will find out when the future gets here.–*WCO Walter A. Rosser, Blair County.*

Water quality

Since its founding, the Commission has had a vested interest in protecting water quality throughout the state. This provides all people with the opportunity to enjoy fishing, boating and other water sports in and along waters of the Commonwealth. Water certainly provides recreational opportunities, but we all need fresh water to conduct our daily activities. Some people forget how important water quality really is.

During the summer and fall of 1998, some communities across the state were reminded of how important clean water is. Reports broadcast almost every evening on the local news spoke of water shortages or water use restrictions. One town in Cambria County had its water shut off every other day. These incidents and conditions should act as a wake-up call for all of us. We all have a vested interest in conserving, protecting and enhancing our most valuable natural resource.–*WCO Terrance L. Kane Bedford/Western Fulton Counties.*

Gimme that trout!

Bob Kime is a sportsman who I speak to regularly at the Berks County Federation of Sportsmen's Clubs meetings. He related the following story to me at a recent meeting. Bob was out enjoying a day of trout fishing when he encountered a great blue heron, a common site along Pennsylvania waterways. Usually these big blue birds fly away when someone gets too close, but not this feathered fisherman. Bob said the heron seemed to have no fear of him as the bird moved closer and closer, apparently unafraid. When he hooked a trout, Bob's attention was drawn to the fish and away from the heron. As he landed the fish on the bank, Bob was stunned as the heron, which had come up behind him unnoticed, stuck his long bill between Bob's legs and grabbed the fish before Bob even had it unhooked. After a brief tussle with the long-legged thief, the heron gave up and flew away, squawking loudly. Bob said he enjoys watching herons and doesn't mind seeing them take a few fish. But he says he draws the line when the herons get so lazy that they expect him to catch their fish for them.–*WCO Ray Bednarchik, Northern Montgomery County.*

illustration-Ted Walke

Hats off to volunteers!

In April 1998, 21 volunteers gathered at an illegal dumping site overlooking Opossum Creek, in rural Adams County. Most of those gathered were members of Adams County Trout Unlimited, various Adams County sportsmen's clubs and the Adams County Federation. Several people were not affiliated with any represented organization, and several would not even consider themselves outdoor people. Some had driven from as far as the Harrisburg area to assist with the clean-up.

The dump site had been in use for at least 30 years. It contained just about anything imaginable: Old refrigerators, television sets, furniture, bags of old diapers, bags of household garbage and wedding photos (If you would like the photos returned, please give me a call. We will work something out).

With a combined effort on the part of the volunteers, the landowner, Bickie Redman from the Adams County Office of Solid Waste, and the Fish and Boat Commission, the area was noticeably improved. Large items were hauled up by hand over a steep bank, and a passageway was cut through the trees so that items at the bottom of the bank could be picked up by a contractor with a backhoe.

The view while fishing Opossum Creek will now be much nicer. I just want to thank the men and women who donated their time unselfishly to enhance the beauty of this area. If everyone would become this involved just for one day out of the year, we would have a much better world.–*WCO David R. Keller, Adams/Western York Counties.*

What you can't see

As a Waterways Conservation Officer responsible for patrolling two pools of the Susquehanna River, I had always been amazed at the number of boaters who were unaware of the hidden obstructions to navigation. No flowing waterway is without its ever-changing obstructions and hazards. All boaters should take the time at the start of each boating season to learn the waters on which they are boating.

Even though our agency attempts to mark as many hazards as possible, boaters need to understand that rivers are constantly changing. High water floats logs downstream that, when waters recede, become embedded in or lie on the river bottom and may be hidden just below the water's surface or barely protruding above it. At night, especially, these hazards are simply invisible.

Another constant change is river water levels. Take the time to call NOAA's river forecast toll-free number, 888-881-7555, before each boating trip to learn the river depth and flow. What you can't see can hurt you.–*George Geisler, Southcentral Assistant Regional Supervisor.*

Common sense and care

On the back cover of the September/October 1997 *PA&B* there's a story by Dan Martin called "Life Jackets and Wading." Reading this article brings to mind an incident that adds to Dan's story. In early September I was on patrol checking the East Branch of the Perkiomen Creek where it flows through one of Lower Salford Township's beautiful parks. Two gentlemen had brought their children out for a day of fun by the stream, including lots of wading and fishing. While talking to the fathers, I observed that the youngest children were wearing personal flotation devices while wading in the stream. I couldn't help but congratulate these gentlemen for their common sense and obvious care for their children. We require that children 12 years of age and younger wear PFDs while underway in most boats, but parents need to think about putting their kids into PFDs anytime they are near the water.–*WCO Robert W. Croll, Delaware County.*

Easy investigation

I recently investigated a complaint of a fish kill in French Creek. I noticed many fish in the area, but they were alive and well. I looked upstream and downstream, and I looked on the other side of the creek, but all I found was one dead sucker–hardly what I would deem a fish kill. All I could come up with was that the anonymous complainant might have seen the large numbers of willow tree leaves on the bottom of the creek, and may have mistaken their silvery, motionless undersides for small, dead fish. I wish all fish kills were this easy to investigate!–*WCO Thomas J. Tarkowski, Venango County.*

Priorities

When last year's end was rapidly approaching, everyone seemed to be in a hurry with a deadline to meet. There were last-minute holiday shopping trips, tree trimming, house decorating, and social events to attend. With less than two weeks to go, on a cold December day, I met an angler who had a more important commitment. He was a serious carp fisherman, and he was trying to land two more to make it an even 400 carp for the year. I have to admire his priorities and persistence.–*WCO Lee Creyer, Southern York County.*

Home improvements

While conducting surveillance following a winter trout stocking at Stone Valley Lake, I noted appreciable shoreside timber damage from the resident beaver population. This area is owned and managed by Penn State, whose personnel had attempted to thwart the beavers' timbering activities by placing wire enclosures around the remaining undamaged shoreside trees.

A short time later, I observed a beaver making repeated trips with limbs and branches to a shoreline point just out of view. Slowly closing the distance to a point of better view, I observed the beaver adding renovations to its family shoreside lodge. I couldn't help but silently chuckle when I noticed that "nature's engineers" had cleverly used some human components in their construction–many flattened pieces of the protective wire enclosures were interwoven into the exterior of the lodge!–*WCO Alan D. Robinson, Huntingdon County.*

Early start to the season?

On the night before the opening day of trout season, I was on a field training assignment with WCO Sally Corl of Carbon County. We were met by DWCO Peter Sussenbach, who shared a story with us. He saw someone wading in an approved trout water. He snuck closer to the individual to get a better look. Fortunately, the person wasn't getting an early start on the trout season. DWCO Sussenbach asked the individual what he was doing. The person responded, "I'm panning for gold."–*WCO Tom Stuckey, Lebanon/Southern Dauphin Counties.*

Where's the nearest fast food?

As a field training officer, I assist in training a few cadets from each class. One cadet, from southeast PA, arrived this spring. After a six-hour drive, he emerged from his vehicle with an amazed look on his face. After assuring him that he was still in Pennsylvania, we departed for patrol. Two hours later he said that he had seen more trees here than he had seen in his entire life. His next question was, "Where's your closest fast-food restaurant?" I said that it was in Bradford, 17 miles away.

With amazement he asked, "Where's the closest Home Depot?"

"I don't know," I answered. "Probably two hours away, either in Erie or Buffalo."

He was stunned. His next response was, "How do you survive so far away from everything?"

After letting him wonder about my family's lifestyle for a while, I assured him that we did have telephones with private lines, electricity, indoor plumbing and by gosh, even cable TV. I didn't realize I was living without "civilization"!–*WCO R. F. Mader, McKean County.*

photo-Karen Cimms

Beltzville Lake Eagle Scout Project

Lehighton Area High School student Joe Alfano, 17, chose a fish habitat improvement project to support his becoming an Eagle Scout. He and other members of Boy Scout Troop 600, Llewellyn, made 20 cribs to sink into the depths of Beltzville Lake. With assistance from the Commission and the U.S. Army Corps of Engineers, Alfano chose this project because when Beltzville was constructed some 30 years ago, the area was completely cleared, leaving the lake bottom barren of plentiful fish structure. Alfano's cribs provide hiding places, breeding sites and feeding areas for baitfish and game fish.

photo-Karen Cimms

photo-Karen Cimms

With the help of his parents, Wayne and Sandy Alfano, fellow Scout Chris Butler and other volunteers, Joe placed the 300-pound structures in the lake. Joe's father, Wayne, is the Commission's Assistant Regional Supervisor in the Northeast Law Enforcement Region. Joe became an Eagle Scout last October.

photo-Wayne Alfano

Joe Alfano (2nd from right, back row), with the help of fellow Boy Scouts, placed 20 cribs in Beltzville Lake as part of his Eagle Scout requirement.

Fishin' from the Kitchen

Sauger Florentine *by Wayne Phillips*

Rolling sauger fillets around a spinach filling makes a very flavorful Mediterranean-style dish.

photo-Wayne Phillips

Ingredients for four servings:

☐ 8 sauger fillets, deboned and skinned.

Spinach filling:

☐ 1 large package fresh spinach, stems removed and washed.
☐ 2 cloves garlic, finely diced.
☐ 1 tsp. lemon zest, finely diced.
☐ 1 Tbsp. extra virgin olive oil.
☐ Salt and pepper to taste.

Tarragon mayonnaise sauce:

☐ $^1/_2$-cup fresh tarragon leaves or 1 Tbsp. dried.
☐ 1 tsp. lemon juice.
☐ 1 tsp. olive oil.
☐ $^1/_2$ to 1 cup mayonnaise.
☐ Salt and pepper to taste.

Procedure

Heat olive oil in saute pan. Add garlic, stir and saute lightly, but take care not to let it get dark. Add spinach. Turn spinach over to bring the garlic to the top to prevent garlic from burning. When spinach is wilted, add lemon zest and season with salt and pepper. Drain in a colander, reserving liquid. When cool, squeeze as much liquid from the spinach as possible. If using frozen spinach, briefly saute in garlic.

Salt and pepper the sauger fillets. On each fillet, place a thin layer of spinach. Roll the fillet and secure with a toothpick. Place in a baking dish. Add $^1/_2$ to 1 cup of liquid to baking dish. Using the liquid from sauteing the spinach adds nice flavor. You can also use wine or water with lemon juice in it. Bake in a 375-degree oven until fish is opaque, about 15 minutes. Place in a bowl and mix in mayonnaise. Season with salt and pepper.

Serve

Serve the sauger fillets on a bed of rice or place fillets on a platter and arrange the rice around them. Cooking rice with turmeric turns the rice a lovely golden color. Spoon some sauce over the fillets. Remember to remove the toothpicks before serving.

This sauger dish makes a great appetizer when served warm instead of hot. A single fillet on a bed of shredded lettuce with a tomato wedge looks and tastes wonderful.

Hints

Always place your stuffing on the inside (rib side) of the fillet and not on the skin side. Take care not to overcook the rolled fillets or they will fall apart. When the fish turns opaque, it is done. Cooking the fillets with a bit of liquid helps keep them moist.

Coldwater Conference at Penn State

The fourth annual Keystone Coldwater Conference: A Primer on Instream Habitat will be held at the Penn Stater Conference Center Hotel on Saturday, February 19, 2000. The purpose is to inform individuals from Trout Unlimited chapters, sportsmen's groups and watershed organizations about the value and function of instream habitat and how to preserve it.

The registration fee, which includes lunch, is $20. Program details and registration materials will be available by mail in early January. **To request a registration form, call 814-863-5100 and ask for Chuck Herd. For more information, call Ed Bellis at 814-863-7585 during the day.**

The mission of the Pennsylvania Fish & Boat Commission is to provide fishing and boating opportunities through the protection and management of aquatic resources.

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PFBC World Wide Web Site:

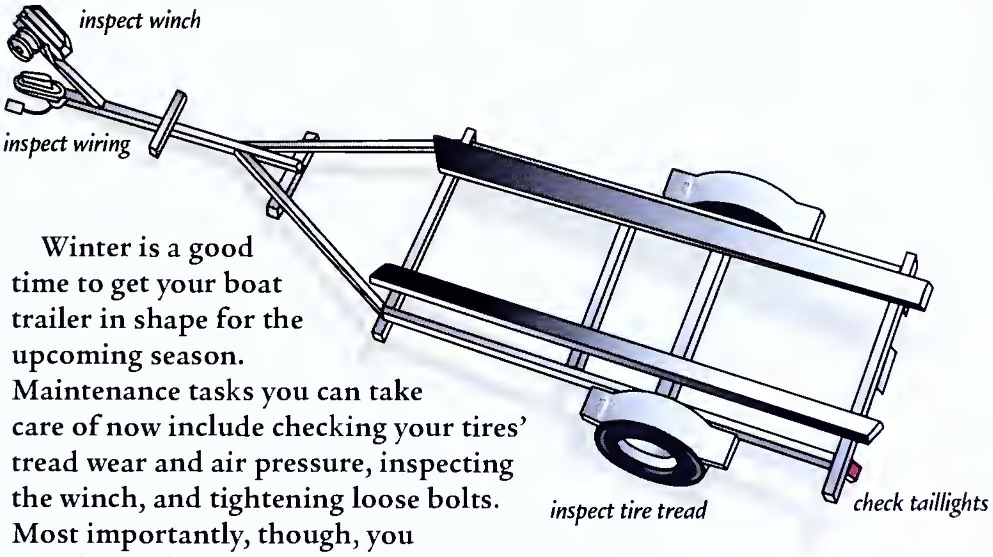
Angler's Notebook *by Jon Farley*

Live minnows, including the common shiner and fathead minnow, are some of the best all-around baits for ice fishing. Ones in the 1 $\frac{1}{2}$- to 2-inch range will take a variety of game fish including perch, trout, pickerel and bass. They work best when hooked through the lips with size 12 hooks and fished with 4- or 6-pound test line. They can be fished with jigging rods and unlike other baits, they will swim around and provide action when used with tip-ups.

If you're a hardwater angler, take some time to "square away" your gear before heading outdoors and taking to the ice. Some tasks that can be performed ahead of time are sharpening auger blades, pre-rigging hooks and leaders, and making sure tip-ups and rods work. These tasks are easily accomplished indoors, but doing them on a snowy, windswept lake can ruin any ice-fishing trip.

In addition to the Commission's web site, online boaters and anglers can access useful information at another great website. It is the U.S. Geological Survey's list of stream-gaging stations throughout the state, at http://pa.water.usgs.gov. It shows frequently updated water levels on different streams and rivers, and even lists some current water temperatures. The site covers most of the streams in the Ohio, Susquehanna and Delaware River drainages.

One of the biggest problems facing fishermen this time of year is the prospect of cold, wet hands. One way to alleviate this problem is to wear fingerless wool gloves. The fingerless feature allows you to use your digits without removing the gloves, while the wool insulates, even when it's wet. Using air-activated hand warmers and carrying extra gloves are also good ideas.



Winter is a good time to get your boat trailer in shape for the upcoming season. Maintenance tasks you can take care of now include checking your tires' tread wear and air pressure, inspecting the winch, and tightening loose bolts. Most importantly, though, you should check out the wiring and taillights; your first trip to the lake is a bad time to find out your trailer lights don't work.

illustration- Ted Walke

Cast & Caught

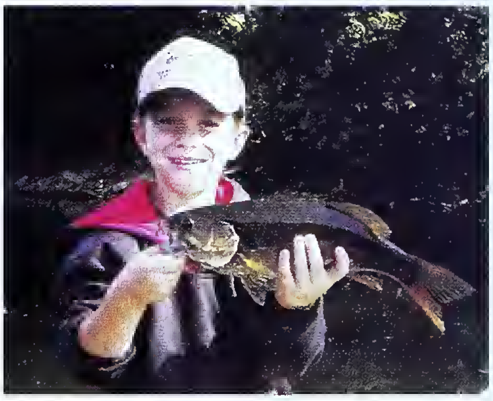
Nick Bohonek, Pittsburgh, caught this 28-inch, 9 $^{1}/_{2}$-pound steelhead last October in Elk Creek. It was released unharmed after the photograph was taken.

Mike Hrabina, Quakertown, caught and released this pickerel last February in the Ledgedale area of Lake Wallenpaupack. The pickerel weighed about 6 $^{3}/_{4}$ pounds. It grabbed a 3-inch shiner on a tip-up.

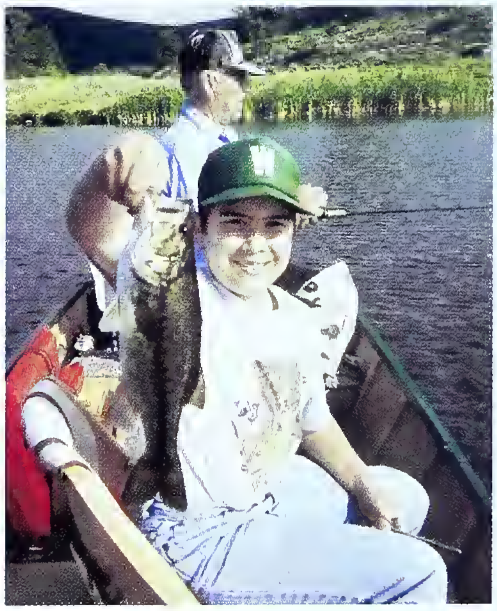
Fred Kopp, Pittsburgh, holds a 4-pound, 4-ounce saugeye he caught in the Allegheny River last February. The saugeye, which measured 24 inches long, hit a jig-and-minnow combo.

Last June, the action at Shillington Lake, Berks County, was pretty good for Billy (above) and Megan McKay. Billy, age 5, caught a 12-inch largemouth bass on a shiner, and Megan, age 3, caught a 14-inch bullhead on a nightcrawler.

Kevin Marson, age 10, proudly hoists the 22 $^{3}/_{4}$-inch channel catfish he caught in Pymatuning Reservoir last July. The catty was 4 $^{3}/_{4}$ pounds and fell for an eighth-ounce jig-and-nightcrawler combo.



Kurt Bettler received a Catch & Release Award for this 3-pound, 13-ounce smallmouth bass. The fish measured 20 $^{3}/_{4}$ inches long, and was caught in the Delaware River last September near Riegelsville.



Ben Hitesman, age 13, shows the 17-inch, 2 $^{1}/_{2}$-pound largemouth bass he caught in Rose Valley Lake, Lycoming County, over the last July Fourth weekend. The bass took a crankbait.

Year 2000 PFBC Photography Contest

PICTURE THIS! Your photograph in *Pennsylvania Angler & Boater* Magazine, in Commission publications, on the Commission's web site, and on Commission exhibits!

The Year 2000 Pennsylvania Fish & Boat Commission Photography Contest is intended to foster a greater appreciation for Pennsylvania's fishing and boating, and aquatic resources.

Contest winners will be determined by a panel of judges chosen by the PA Fish & Boat Commission. Photographs will be rated on qualities including composition, originality, visual appeal and adherence to contest rules. First-, second- and third-place winners, and honorable mention winners, may be selected in each category.

Contest winners and honorable mention winners will receive a certificate. Winners will also receive a large-size (6-inch diameter) 10th Anniversary Trout Stamp patch. Honorable Mention winners will receive a year 2000 Trout Stamp patch. Winning entries and honorable mentions may appear in a contest feature article in a future issue of *Pennsylvania Angler & Boater*. All entries may also be used elsewhere in the magazine, on the magazine's cover, in Commission publications, on the Commission's web site, and in Commission exhibits.

The contest will run from January 1, 2000, through December 1, 2000. Winners are scheduled to be announced during an awards presentation at the January 2001 Commission meeting.

Rules

- The contest is open to amateur photographers (anyone who makes less than half one's annual income from taking and/or selling photographs).
- Entries must be original works taken in Pennsylvania, and they must have been taken by the person entering the contest.
- Entries must also show adherence to Pennsylvania fishing and boating laws and regulations.
- In photographs all boaters, and anglers in boats, must be wearing properly fitted, buttoned and zipped life jackets.
- Entrants may submit only mounted 35mm color slides, color prints in sizes 3 $^1/_2$"x5", 4"x6", 5"x7", or 8"x10", or unmounted medium-format and large-format transparencies.
- All submissions must be in color–no black-and-white photos.
- All submissions must be original–no duplicate slides or electronic submissions.
- No mounted, over-matted, framed or glassed prints will be accepted.
- Retouched or electronically manipulated entries are not allowed.
- Please do not send negatives.
- Each photo must include the entrant's name, address, phone number, location of the photograph, and category, in addition to a fully completed official entry form on this page for each category entered.
- Participants are limited to a total of two entries per category. Multiple submissions are allowed, as long as entrants submit no more than two items per category.
- The Pennsylvania Fish & Boat Commission shall have the right to use all submissions for publishing, illustration, World Wide Web display, advertising, trade, exhibitry and promotion, or any other use in any medium for any purpose without compensation.

Entrants who want their materials returned must include a self-addressed, stamped envelope with the right amount of postage and appropriate packaging to safeguard materials. Submissions that do not include return envelopes and postage will not be returned.

Photo Contest Entry Form

www.fish.state.pa.us

Complete this form with each entry and mail to: PFBC Photo Contest, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000. The deadline for the Commission's receiving entries is December 1, 2000.

Entrant's Name: ____________________

Address: ____________________

City: ____________ State: ______ Zip: ______

Phone: ____________________

E-mail (if available): ____________________

Date: ____________________

Signature: ____________________

Categories

☐ 1. Seasonal Fishing and/or Boating
☐ 2. Family Fishing and/or Boating
☐ 3. Reptiles and Amphibians (Animal closeups, or photos with the animals as the primary subject)
☐ 4. Invertebrates (worms, aquatic insects, crustaceans, mussels)
☐ 5. Fishing & Boating Resources (primarily waterway scenic emphasis)

Office use only - Leave blank
Category:Entry #:

This form may be photocopied.

2000 State-Fish Art Contest

Presented by

Wildlife Forever

See inside this issue for details including entry applications and rules.

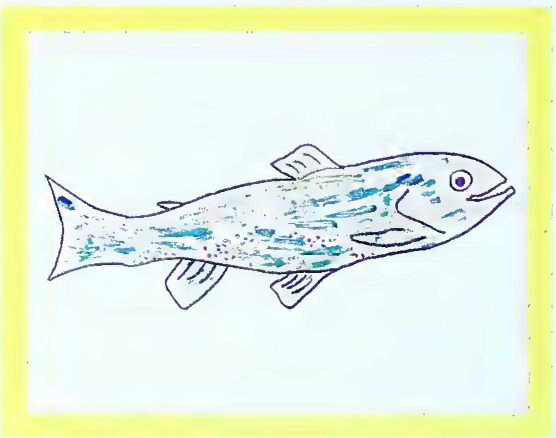
Entry deadline:
March 31, 2000

Winners announced:
Earth Day, April 22, 2000

State-Fish Art Expo:
June 2-4, 2000, at the Mall of America in Bloomington, Minnesota

All contest information can be found at www.statefishart.com or on AOL (keyword: fishart).

1999 Pennsylvania Winners



Jacklyn Roadcap, *Grades 4-6 winner*

Patrick Lowe, *Grades 7-9 winner*

Samuel Philip, *Grades 10-12 winner*

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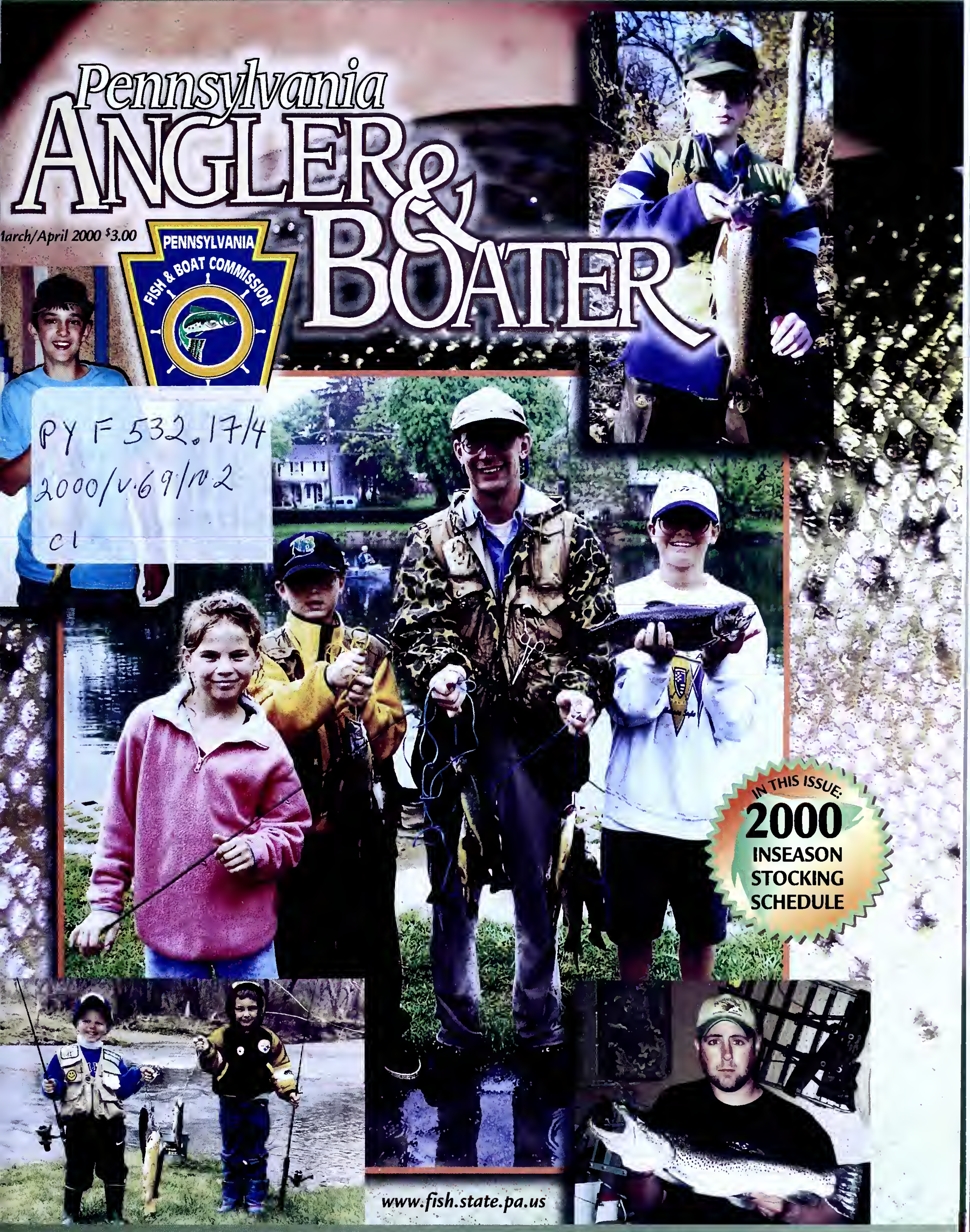

IN THIS ISSUE:
2000 INSEASON STOCKING SCHEDULE

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The Keystone State's Official Fishing and Boating Magazine

PROTECT • CONSERVE • ENHANCE

RESOURCE FIRST

Trout Season and Looking Toward Summer

The March/April issue of *Pennsylvania Angler & Boater* traditionally focuses on trout. Pennsylvania is one of the top trout-fishing states. We often vie with California for the title of "Tops in Trout" in terms of trout angling days. About 70 percent of our license buyers purchase a trout stamp. For the new trout season that starts on April 15, we will have a new creel limit for the first time in 48 years. The limit is now five trout per day. Trout fishing patterns have changed over the years, and the new limits reflect the desires of the vast majority of trout anglers. Indeed, many trout anglers practice catch-and-release fishing regularly.

Elsewhere in this issue you'll find the current inseason trout stocking schedule. Remember that this schedule is subject to change and that updates are available on our web site: www.fish.state.pa.us. The Fish & Boat Commission stocks about 5 million adult trout each year, and our cooperative nurseries stock another one million trout. Based on the best available information we have, Fish & Boat Commission-stocked trout are safe to catch, safe to handle, and safe to eat in moderation.

Even as you enjoy a spring day, thinking about trout fishing or angling on a trout stream, you may wish to think forward to the summer. As I reminded readers here in the last issue, there is a new requirement in effect for certain boat operators in Pennsylvania. Starting January 1, all operators of specialty boats known as personal watercraft (PWC) must now carry a boating safety education certificate with them when on the water. You earn a certificate by completing a safe boating course or passing an equivalency exam. This regulation applies to all operators of PWC, not just the owners.

Close to 30,000 safety certificates were issued by the Commission last year–a new record. Still, that's only a fraction of the total number of PWC operators in the state. Our instructors also report that many of their students were not PWC operators at all. As a result, we anticipate substantial demand for boating courses this spring. Boaters are advised to take a course soon to avoid the spring rush. Now is the time to sign up for a boating safety course!

A personal watercraft is a boat less than 16 feet in length that uses an internal combustion motor powering a water jet pump as its primary source of propulsion. It is designed to be operated by a person sitting, standing or kneeling. Personal watercraft are better known to the public by brand names that include Jet Ski®, Sea Doo®, Wave Runner®, Tiger Shark®, Wet Jet®, and others.

Operators of these boats can meet the new requirement by successfully completing a Commission-approved boating course and accompanying examination. Approved courses include the Commission's PA Basic Boating, PA Personal Watercraft, Boating and Water Safety Awareness, and the new PWC Equivalency Examination. Other approved courses include those taught by the U.S. Coast Guard Auxiliary, the U.S. Power Squadrons, and other organizations. No matter which course you take, successful students are issued the same type of boating safety education certificate by the Commission.

Even though PWC currently make up just seven percent of the 352,000 boats registered in Pennsylvania, they are involved in a disproportionate number of boating accidents and complaints from other boaters and anglers. In 1999, 29 percent of all reported boating accidents involved at least one PWC, and 45 percent of all boating collisions involved at least one PWC. Analysis by the Fish & Boat Commission shows that these accidents are usually caused by operators not keeping a proper lookout or operating a boat in a careless manner. Many of the accidents are caused by people new to boat operation, and nearly all of these accidents are avoidable. These incidents and the types of violations commonly observed by our officers can be addressed through safety education.

Most boating courses are taught by organizations such as community colleges, boat clubs, and the like, and a modest fee is often required. Boating courses taught by Commission personnel are very low-cost or free. A list of courses and their sponsors is available from the Commission by calling 1-888-723-4741, or by visiting our web site at www.fish.state.pa.us. When inquiring about a course, ask the sponsor about fees. Under current law, there is no fee for issuance of a boating safety education certificate. A boating safety certificate is good for life. It does not need to be renewed regularly.

Even though we strongly recommend a safety course for all boaters, the mandatory education provisions apply only to the operators of PWC. This requirement does not apply to operators of other boats such as canoes, fishing boats and sailboats, but taking a course is still a good idea.

Another good idea is to take a look at some Internet courses, if you have access. Even though these courses do not meet the Pennsylvania Fish & Boat Commission's criteria for course approval, they are good educational tools. Th BOAT/U.S. Foundation for Boating Safety Internet course and other on-line boating safety lessons serve as great warm-ups for an approved course in Pennsylvania.

Boating courses are good for the entire family. There is no minimum age requirement to take a boating course. Most courses are designed for students 12 years of age and older. There is a requirement that all personal watercraft operators must be at least 12 years old.

Peter A. Colangelo
Executive Director
Pennsylvania Fish & Boat Commission

Commission Adopts Special Regulations for Three Southwest Waterways

The Pennsylvania Fish & Boat Commission adopted special fishing regulations for three southwest Pennsylvania lakes expected to open for public use later this year. The special designations occurred at the agency's winter meeting January 21-22 in Camp Hill.

Hinckston Dam and Wilmore Dam, Cambria County, along with Quemahoning Reservoir, Somerset County, were designated as Big Bass Waters. Under Big Bass regulations, the daily creel limit for bass is four fish that are 15 inches or larger. In addition, all three waters were added to the Panfish Enhancement Special Regulation Program, designed to increase the number and size of sunfish, crappies and yellow perch. Wilmore Dam and Quemahoning Reservoir will have a nine-inch minimum size limit for crappies and yellow perch, along with a seven-inch minimum on sunfish. Hinckston Dam will have a nine-inch minimum for crappies with the seven-inch restriction for sunfish. All three lakes will allow a daily panfish limit of 20 (combined species).

In other action, the Commission:

- adopted a provision that allows unpowered boats with a state of principal operation other than the Commonwealth to meet Pennsylvania's registration requirements if they comply with the registration and display requirements of their state of principal operation. The move was approved to simplify the understanding of Pennsylvania's regulations for non-residents and encourage outdoor recreational tourism. Previously, unpowered boats from other states were required to be registered and display a validation sticker and registration number to use Fish & Boat Commission access areas, regardless of the registration rules in the craft's home state.
- passed rules regarding the display of validation decals only on boats possessing valid marine documents when used for recreational purposes when Pennsylvania is the state of principal operation.
- approved seeking public comment on proposed processes for releasing documents pursuant to the state's Right to Know Law.
- adopted special provisions for the operation of boat liveries.
- decided to seek public comment on a proposed rewriting of rules related to required sound-producing devices for boats.
- opted not to adopt a suggested ban on personal watercraft on Lake Winola, Wyoming County.
- opted not to promulgate proposed special boating regulations on a section of the Schuylkill River within the boundaries of Valley Forge National Park.
- authorized the lease of approximately 3.5 acres of Commission property along Fishing Creek, Columbia County, to PennDOT for the construction of a parking facility for use by anglers and the general public.
- authorized the acquisition of a three-acre parcel from PennDOT for a future access site along the Susquehanna River in Hallstead Borough, Susquehanna County.
- amended miscellaneous special regulations to reflect the statewide trout creel limit reduction.
- approved a grant of $6,200 to the Great Lakes Fishery Commission for a Lake Erie walleye harvest study.
- established guidelines for the designation of waters limited to specific populations.
- clarified regulatory language to make it clear that the use of crossbows for fishing other than by persons with disabilities with the appropriate permits is not allowed.
- proposed rules allowing for a boater to establish positive proof of boat registration to a law enforcement officer via mail.
- proposed regulatory amendments clarifying legal uses of motor vehicles on Commission property.
- proposed consolidating two overlapping sections of the regulations dealing with the right to limit access to Commission property.
- proposed a housekeeping regulation to affirm that the taking, catching or killing of herring in the Susquehanna River and its tributaries is unlawful.
- proposed regulations clarifying the process for acquiring title to boats that are junked, destroyed, lost, stolen or abandoned.–*Dan Tredinnick.*

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Casting Around

Inseason Stocking Schedule, Cover Photos, Water Trails, Conserve 2000

In this issue the anticipation of opening day grows as we publish the year 2000 Inseason Stocking Schedule, beginning on page 41. In addition, the article "Year 2000 Expanded Trout Fishing Opportunities," on page 34, reveals where you can find a few new spots this season. Even though the stocking list appears in this issue, it is available separately free at Commission offices and by mail for $1.

Be sure to check out the stocking list's last pages, which include Saturday stockings. The Commission announces only "week-of" information for its regular inseason stockings. But for these special Saturday stockings, the Commission announces the days and times. The aim here is to serve anglers who may benefit from fishing right after fish are stocked.

We hope this issue's cover predicts your enjoyment and success this opening day and during the entire season! The large cover photo shows **David Henzler**, Ephrata, with (from left) daughter Whitney, age 9, son Joshua, age 10, and son David, age 12. They were fishing at Children's Lake, Boiling Springs, Cumberland County, last May. Here are the details on the other cover photos:

- **Jason Shelly** (top right), age 11, with an 18 1/4-inch rainbow trout he caught last November in Yellow Breeches Creek, Cumberland County.
- **Kevin Cooley** (lower right), Lemont Furnace, with a Senior Angler Award-winning 7-pound, 6-ounce brown trout he caught in the Youghiogheny Reservoir tailrace.
- **Zachary Ambrose** (left in lower left photo), age 4, and Taylor Garman, age 5, with their early season catches from Standing Stone Creek, Huntingdon County.
- **Nathan Krawzyk** (top left), age 13, with a 19-inch brown trout he caught last June in Mahoning Creek, Jefferson County.

Special thanks to all these anglers and their families for sending us these pictures.

Author **Jo Ellen Litz** takes readers on a historical Swatara Creek float in this issue's water trail feature. For the details, please turn to page 18.

Water trails are much like the more familiar land-based trails, except in this case you follow the trail by boat, instead of hiking or riding a bike or horse. Water trails provide opportunities for fishing, wildlife watching, enjoying the scenery, learning about the history of a waterway and the surrounding area, and just leisurely motoring or paddling down a waterway. We began our features on water trails in the last issue with the Raystown Branch Juniata River Water Trail. The next issue's water trail is the Lehigh River.

This issue's Conserve 2000 article, "Habitat and the Brook Trout," by **Walt Dietz**, probes the plight of Pennsylvania's river and stream habitats over some 400 years. Walt focuses on trout, especially brook trout, to explain how and why habitats have changed. Be sure to read Walt's excellent article, beginning on page 50.–*Art Michaels, Editor.*

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The Keystone State's Official Fishing and Boating Magazine

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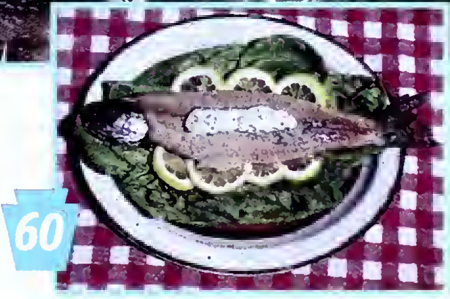
About the cover

This issue's cover shows (large photo) the Henzler family's trout fishing success, along with great catches by (clockwise from top right) Jason Shelly, Kevin Cooley, Zachary Ambrose and Taylor Garman, and Nathan Krawzyk. For more details on this issue's cover anglers and their catches, please see page 4.



with soy-based inks

MAIL

"The Line of Duty"

I'm the great-granddaughter of William E. Shoemaker. Just wanted to let you know how much I enjoyed the article about him ("The Line of Duty," by Jay Osman, Jul/Aug 1999). Not knowing him at all, your article filled me in about him. My family lives in Wyalusing, not far from where he was shot. We all enjoy hunting and fishing. I have a 15-year-old and a 12-year-old who enjoy fishing.

I hope that someday they and their families will also enjoy the relaxation of fishing as my husband and I do. We catch and release our fish so that other anglers may catch them. I do have one that I caught and kept that is mounted on the wall in our living room. Jay Osman wrote a nice article that I will hand down to my children so that they may share it with their families.–*Helen L. Shoemaker Sitas, Wyalusing.*

Creel limit change

Just a few lines to tell you why I'm not going to renew my subscription to *PA&B*. I do not agree with the change in the limit of trout from eight to five. A few years back the trout stamp was created to put more money into the trout program, for more large trout, which did not change very much. I have been trout fishing for 40 years and I think it is time to hang up the boots and rod. I think the Fish & Boat Commission has lost perspective in its job.–*Bill Kline, Saxton.*

We're sorry to hear that you've decided to quit fishing and not renew your subscription.

Pennsylvania's regular-season daily creel limit for trout was set at five beginning in the year 2000. The Commission adopted the new limit at its summer quarterly meeting, last July. The five-fish creel limit replaces the former daily limit of eight, which has been in place on Pennsylvania waters since 1952. The regulation change applies to inland waters and only during the regular season. The daily limit will remain at three during the extended season. The limit change also does not apply to waters managed under special regulations, the Conowingo Reservoir, the Delaware River, or Lake Erie and its tributaries.

The Commission sought extensive public comment on the reduction, including public hearings, letters, email and a statistically valid marketing survey. There was strong public support for the new creel limit, with some 60 percent advocating a reduction. That public support was the crucial factor for Commissioners in considering the proposal because the measure is based on social and policy perceptions instead of a distinct fisheries management need.

The new limit will not result in dramatic effects either on stocked or wild trout populations. Nor will a reduction guarantee that the catch rate is spread among more anglers. On-the-stream creel surveys in Pennsylvania have shown that 90 percent of anglers already creel five or fewer trout. However, adoption of the new regulation does reflect the modern emphasis on fishing primarily for recreational purposes, instead of fishing solely for consumption. The action also brings trout limits more in line with limits established for other popular game fish such as bass (six fish daily limit) and walleyes (six fish daily limit).

The trout stamp program was implemented to generate additional funds to keep the existing trout stocking program functioning, not to produce more and larger trout. Nevertheless, the average size of stocked trout has increased.–*Ed.*

Stubby tails

I am a college student at Penn State-Berks Campus. I am also an avid angler and *PA&B* subscriber. With classes, my fishing opportunities are somewhat limited. But recently I have been taking advantage of your Select Trout Stocked Lake Program for the month of March. spent the last two weeks of March fishing in the evening at Antietam Lake, Berks County. I did fairly well, with a total of eight trout over the period (five rainbows and three browns) and several nice-sized panfish.

However, I noticed something usual with the rainbow trout that I was catching. All of them, except for one, had a stubby and somewhat deformed tail. The tail ended abruptly, without tapering as a normal trout tail should. Also, there was a difference in the relative distance from the dorsal fin to the caudal fin in the deformed trout.

When I cleaned the fish, I discovered that this stubby part was also very hard and bony. As I filleted the fish, I notice that the vertebrae at this part were compacted, causing the bulge and stubbiness. I discarded this part, but cleaned the rest of them and since ate them. The meat looked and tasted fine.

I would be very interested in knowing how these "stubby" trout came to be. I am guessing that it may be a particular batch of trout that was stocked that all share this abnormality. The fact that th "stubby" trout I caught were all nine to 10 inches, and the normal rainbow trou I caught was 13 inches, suggests this further. Could this possibly be from overcrowding of rainbow trout in the hatchery? Or is it the result of pollutio or disease in Antietam Lake? If possible I'd also like to know how safe it is to eat these "stubby" trout, since I ate mine.–*Michael L. Deisher, Temple.*

The trout you caught with the shortened tail section between the adipose fin and the caudal fin appear to be suffering from peduncle disease, also referred to as "coldwater disease." Th disease is caused by bacteria and occur at low water temperatures (45 to 50 degrees). Although not necessary for the disease to appear, crowded conditions

can stimulate an outbreak of the disease. The Fish & Boat Commission first encountered coldwater disease about three years ago. Hatchery trout are treated with medicated food containing Terramycin. Unfortunately, the medication is not 100 percent effective at controlling the disease. Because only the tail section of the affected fish grows abnormally, these fish can't be removed from the hatchery by grading, and there are simply too many fish in the hatchery system to make hand sorting feasible. It was fine to eat your catch as long as it was properly cooked.–*David Miko, Commission Area 6 Fisheries Biologist.*

Neshaminy Creek

My name is John and I'm a law enforcement officer in lower Bucks County. I'm emailing you concerning Neshaminy Creek in lower Bucks County. My concern is why this part of the creek is being neglected, concerning stocking, managing and enforcement. Recently there was an article in the *Bucks County Courier Times* about the reason why your department doesn't stock this waterway. Is it pollution, and are the fish tainted? Please, I don't want you to think I'm bashing you. It's just a concern that I and others have.

If you need any help in this area, please email me and I'll be glad to help.–*via email, name withheld by request.*

It was unfortunate that the article in the *Bucks County Courier Times* placed such strong emphasis on fish flesh tainting (poor smell of cooking fish and poor taste of cooked fish, not a smell associated with live fish as they were taken from the stream). Even without the tainting issue, we would not be able to stock the stream because of its wide average width, which exceeds the maximum allowable for new waters to be added to the trout stocking program. We also have concerns about the tendency for the stream naturally to become warm early in the spring (trout are temperature-sensitive), and the poor return to anglers that we would expect from trout stocked in a stream that is so wide, has poor habitat and warms rapidly.

We are not aware of a specific sewage treatment plant that has caused the occasionally reported tainting problems in trout harvested from the trout-stocked section of the Neshaminy in central Bucks County. Tainting of trout flesh by treated sewage appears to be associated with the volume of treated sewage in a stream in comparison to the amount of fresh water that makes up the stream's flow. With modern treatment plants, an Oregon study revealed that tainting can begin to occur when treated sewage comprises 22 percent of the receiving stream's flow. In the Neshaminy, present occasional tainting problems are probably the cumulative effect of multiple sewage treatment plant discharges. With tainting occurring in the upstream stocked-trout section, we anticipate that the problem would be the same or worse farther downstream in lower Bucks because the effects of additional sewage plant discharges to the Neshaminy or its tributaries would accumulate. Remember, however, we have a number of concerns about the lower Bucks section, not just tainting.

We have frequently cautioned the Pennsylvania Department of Environmental Protection and the Delaware River Basin Commission, the permitting agencies, about the cumulative effects of wastewater discharges and the compounding effects of permitting additional ground and surface water withdrawals (less diluting fresh water and more wastewater) in drainage basins where streams are already suffering from low flow and heavy use for wastewater assimilation. A recent independent report from the United States Geological Survey to the Delaware River Basin Commission confirmed the over-allocation of ground water in the Neshaminy Basin, which, of course, is a product of over-development.

Now, the Delaware River Basin Commission is more seriously addressing flow issues and water allocations throughout the Delaware Drainage Basin, and the Fish & Boat Commission, through its Division of Environmental Services, has been making some headway in these issues. Unfortunately, the damage may already be done on the Neshaminy and its tributaries.

I can assure you that we will continue to pay attention to these issues of stream flow and wastewater treatment in the Neshaminy Basin and other drainage basins around the Commonwealth.–*Michael Kaufmann, Area 6 Fisheries Manager.*

BACKTALK

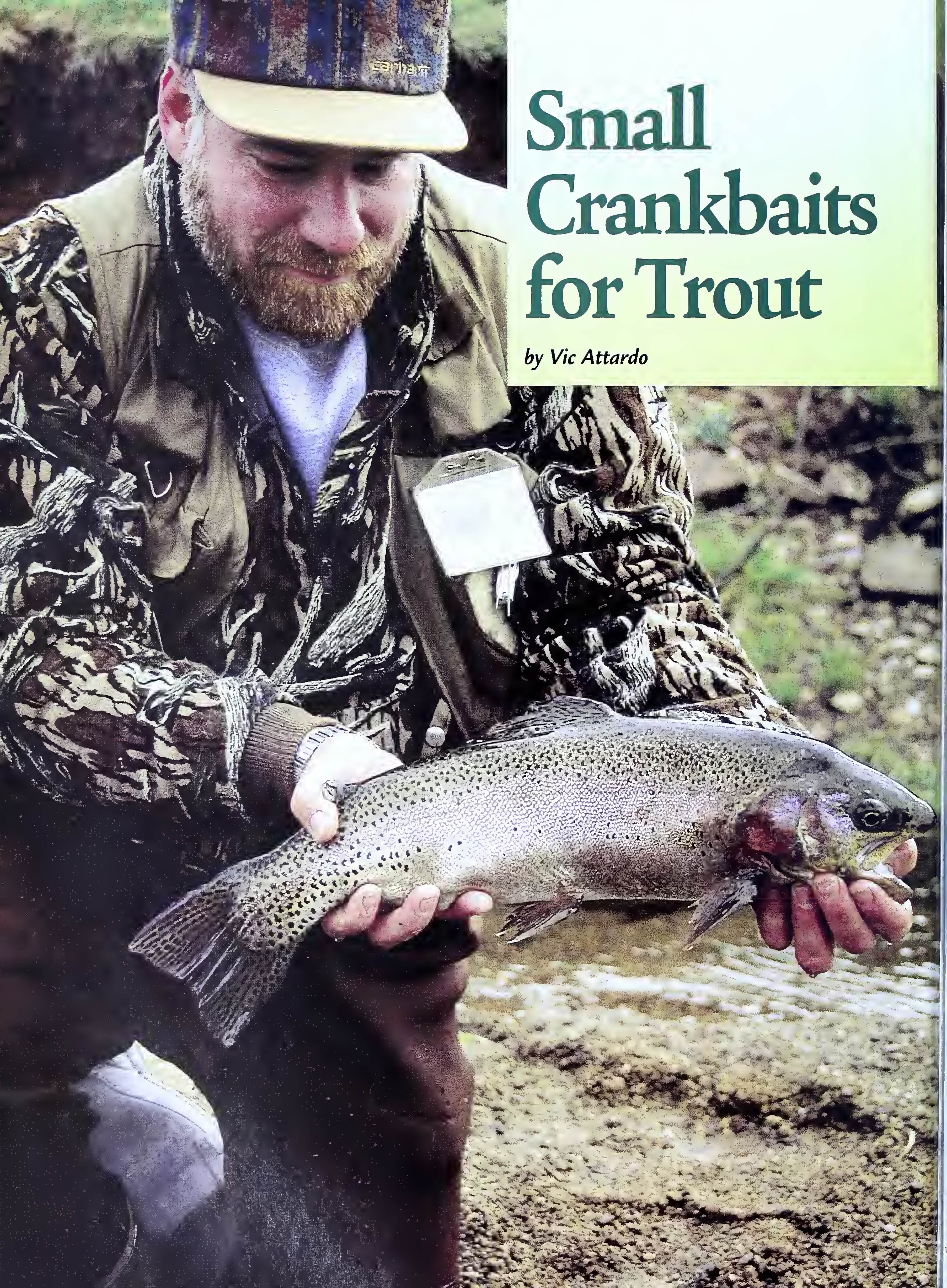
Letters

Argue with the Commission. Applaud us. Advise us. The Fish & Boat Commission invites you to write letters to the editor if you have an idea on *PA&B* content; a question or concern about the Commission; something to say about fish and fishing, or boats and boating; or a helpful idea for anglers or boaters. Please hold letters to no more than 200 words. Letters and email to the Commission become the property of the Commission, and they are edited for clarity and space considerations.

Address all correspondence to: Art Michaels, Editor, *Pennsylvania Angler & Boater*, P.O. Box 67000, Harrisburg, PA 17106-7000; or contact the Commission at its web site: **www.fish.state.pa.us.**

Photo contest

If you'd like to see your photographs appear in more than just our "Cast & Caught" feature, you might want to enter your best of the best in the Commission's new photography contest. The contest runs from January 1, 2000, through December 1, 2000, and focuses on five main subject areas. A panel of judges will determine the winners. For complete details, see page 63 of this issue.



Small Crankbaits for Trout

by Vic Attardo

Fly fishing continues to grow in popularity, and the long rod lets anglers fish either wet or dry, and all that entails. Then there is bait fishing with a variety of enticements made of animal, vegetable and even mineral. Last but not least, we have lure fishing, mostly with spinners and spoons. Variety is no problem here either, because there is plenty of hardware on the market.

But there is yet another way to catch trout using lures. For the most part, these devices are not what you'd consider traditional trout lures. Some are shaped like minnows, and those seem to be a reasonable expansion of the hardware list. A few mimic normal trout foods like crayfish and grasshoppers, but how often do we really use live crawdads and hoppers as trout bait? Still others come in really odd-ball shapes, which look and act like nothing in nature.

After working with a lot of these offerings for the last four or five years, I can tell you that the best of them will catch a lot of trout. Admittedly, I've thrown a few of these offerings in the trash when they failed to produce over a reasonable testing period. But in the right place and at the right time, I've made some pretty impressive catches with lures that fit into the wide category of plastic crankbaits.

At first, the little crankbaits were just something to try, gimmicks in the catalogs and on the tackle shop shelves. But then I began to see that they had their place.

Where I used to spook a trout casting the lightest spinner in summer's ultra-thin clear water, it was surprising how delicately I could land a floating cricket on the surface–and how eagerly it was taken. Then in spring's cool rushing water, I discovered that a suspended minnow bait could be retrieved slowly while still imparting excellent action. On another day I met a hatch of sulfurs with all my fly leaders sitting at home on the kitchen table. So using spinning gear I dabbed down a little plastic grasshopper and trout came from as far away as the next county to grab it.

Along with spinners and spoons, I've recently been carrying a little box filled with colorful two-inch crankbaits. It's amazing how many you can fit in a vest-sized case as long as you're willing to shake the mess, like a clump of paper clips, free of their entanglement.

Now, when I don't feel like fly fishing, I have another way to catch trout. I pull out a medium-light, five-foot spinning rod and using these plastic wonders, go and skin some trout.

Facts about small crankbaits

Some of the crankbaits I've been using work best in the summer and fall. Others produce good numbers even in spring's cooler water. A bunch are better in deeper pockets, as opposed to shallow water. And a few take trout in water so skinny, the flow wouldn't have covered a wicker creel.

Over time, I learned to discriminate the good from the bad and which colors attracted more fish. Oddly, there is one bait that's a real killer in yellow, while its mates, in more natural hues, rarely garner a fish. A few were loved by brook trout in small streams, and others were favored by river-running rainbow trout.

I've also learned that a lot of small crankbaits have their limitations. Though quite a few are divers, they don't work well in strong currents. All they do is twist and turn and pop to the surface and are generally worthless in those conditions.

When working deep in a current, I found it was better to stick to the straight-bodied imitations, and avoid a lot of the crazy shapes. The exceptions to the rule were larger crayfish crankbaits. These get down, and stay down, in really heavy currents, but the torque on the rod is tiring to the wrists. Then again, when I fished the Youghiogheny River last spring–a river with heavy currents where spoons are frequently the order of the day–we slid through a stretch with a long, calm eddy against the bank. The shoreline had a steep slope and the bottom fell off almost immediately. As we floated by in a rubber raft, my partner, using a spoon, hit a snag in this slow water. Seeing this I quickly clipped on a caterpillar-shaped crankbait–the first thing I could untangle from my box–and cast. It got bit by a shore-loving brown. A hundred yards downriver the bait was worthless, but it worked at that spot.

If there is a common thread with the use of these baits, it's that they perform better, and take more trout, on four-pound test instead of six-pound. If I were facing really big river trout, then six-pound test would be better than eight. Never use eight-pound test with these baits.

Most of the crankbaits come with a double-set of barbed, treble hooks. Why in the world you need six points with six sharp knives on a bait that measures less than two inches, I don't know. I routinely crushed the barbs and in all my testing I can't say I lost a single fish because the points didn't have barbs. Unfortunately, when I tried replacing treble hooks with single hooks on the smaller baits–a thing I sometimes do with larger bass-catching crankbaits–the trout crankbaits did not perform very well. With either treble or single hooks, the amount of "hook lock" between the front and rear hook on some of these baits is frequently

> *"If there is a common thread with the use of these lures, it's that they perform better, and take more trout, on four-pound test instead of six-pound. If I were facing really big river trout, then six-pound test would be better than eight."*

intolerable. I did make the switch to single hooks on my four-inch-long balsa and plastic minnows, but this is nothing new to anglers.

Never content to leave anything alone, I doctored the hooks on some baits meant to be worked along the bottom. Removing the rear hook, I added a few strands of Krystal Flash or marabou. I grew very fond of a cream-colored crayfish on which I tied dark-orange marabou to the front hook, actually the head of the plastic crayfish. Also, I liked the results from adding a hank of pearl Krystal Flash to a small bait that resembled a tadpole. Hook adornment was unnecessary on the plastic grasshoppers. In fact, those without jewelry were better than those with.

Bad fishing habits

I owe my trial, and error, of small crankbaits to Commission Area 6 Fisheries Manager Mike Kaufmann. Kaufmann has made an art of using minnow and crayfish plugs for spring trout. He had me try them one year when I sustained a leg injury that restricted my fly casting and wading. With spinning gear, I could (painfully) walk along the banks and target those hard-to-reach places with a lot less effort. I grew fond of the baits.

Kaufmann works a lot of southeast streams, like the Tohickon and Perkiomen, with their sparsely vegetated runs, shallow riffles and wide pools. The trout can see you coming when you park your truck, so Kaufmann uses plugs to make long, out-of-their-sight casts. He's a target-caster, carefully picking his spots instead of making a lot of haphazard throws.

He's also combined his crankbait use with some practical ideas about catching trout. He's successful because he keeps some key ideas in mind. In fact, he believes a lot of anglers don't do well because they fail to follow some simple rules. He once expounded on his theory of why bad anglers don't catch trout. I don't remember the theory word for word, but it goes something like this:

Bad anglers don't catch trout because, first, they disturb the trout before fishing for them. Second, bad anglers don't catch trout because they use inappropriate line. Third, (and this is my favorite) bad anglers fish where there aren't any fish. And last but not least, bad anglers don't fish cover.

"Bad anglers ruin their own chances," Mike said.

Over time I've gotten Mike to expound on his bad-angler theory. To cover the first item, about disturbing trout, he is critical of the practice of walking (I think he says "stomping") up to a bank and looking over to see if there are any fish. Do that, he says, and the fish are gone.

Second, Mike believes strongly in the use of light line. Just like me, he's a four-pound-test guy. Trout have great vision and light line will garner more strikes. I was a fan of clear monofilament, but in the last two or three years I've been working with green co-polymer, and it's great. I hate fluorescent blue/clear line.

The third and fourth rules go hand in hand. You have to know how to read the water to catch trout. Early in the season, look for darker water with a whitewater roof. Also look for dark pools and pockets. It's the basis for everything.

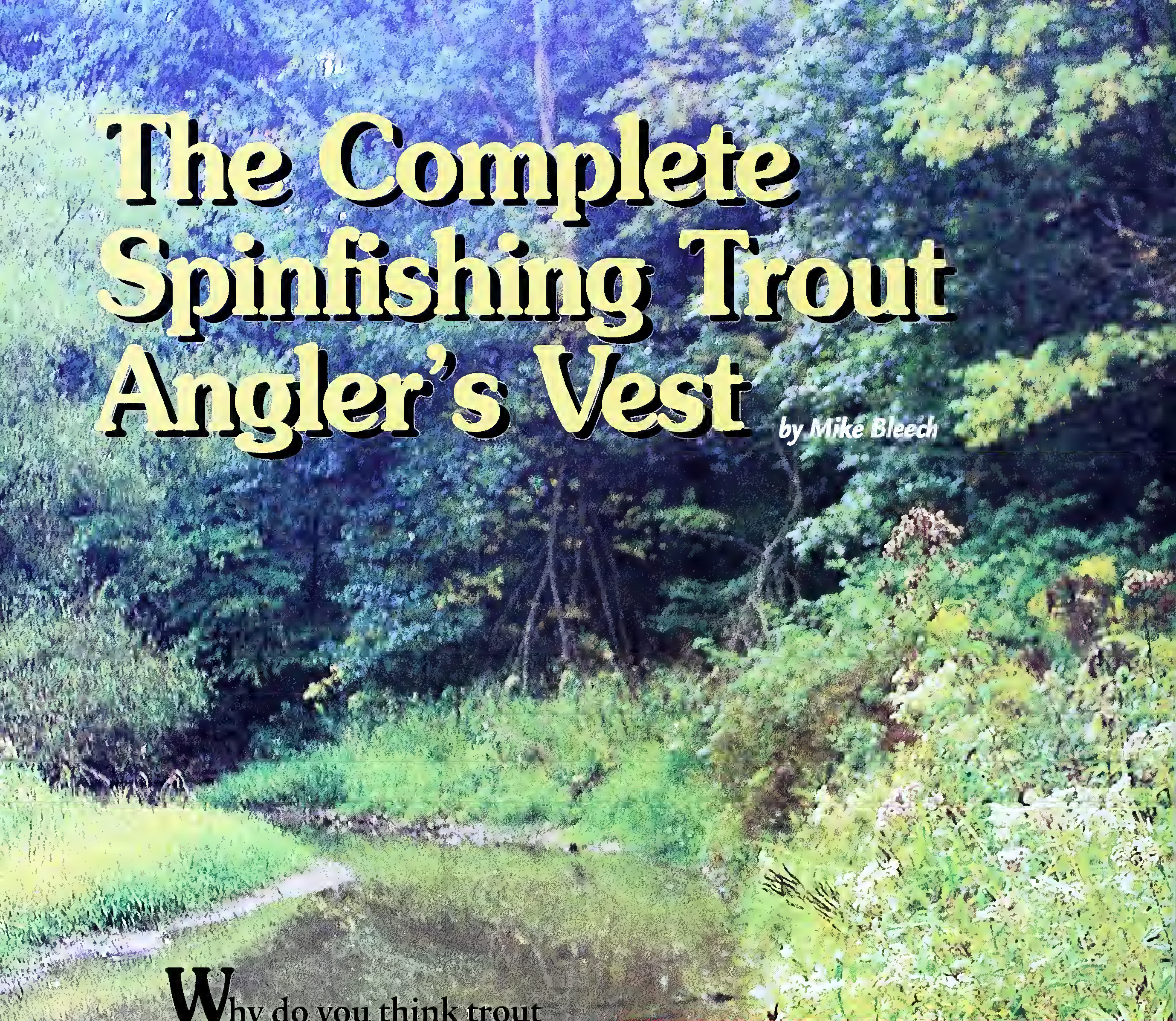
Good times for crankbaits

Kaufmann's use of minnow plugs and plastic crayfish showed me that trout would go for more than just spinners and spoons. One afternoon on Codorus Creek in York County illustrated why I should add a couple of crayfish colors to my kit. It was mid-summer and I came upon Codorus during a crayfish convention. I've seen this spawning activity on other streams. One day there are no crayfish to be seen. The next day the bottom is literally crawling with them. This mass activity is sporadic and doesn't occur year after year on the same waters.

I arrived for the opening of the convention and the trout were in a frenzy gobbling crawdads. The crayfish were literally falling out of the mouths of the trout I caught and still they were going for more. Fortunately for me, the trout had a lot of trouble distinguishing the naturals from my plastic fakes. But I learned they preferred certain colors, particularly green, olive and white (with orange marabou.)

Crankbaits shaped like insects have proven effective in some situations. Plastic hoppers, made to float and gently wiggle when retrieved, are a favorite. I fish them along the banks of streams and rivers where the water is two or more feet deep. Casting them along heavily vegetated banks is excellent. However, for trout, I don't retrieve these hoppers the way the manufacturers designed them. Instead of cranking them along, I like to let them flop on the water and twitch them with a gentle movement of the rod tip. Trout have found these lures as much to their liking as a good fly-rod imitation.

I'm sure I haven't learned everything there is to know about using small crankbaits for trout, but I'm gaining information each season. Since these tiny baits are readily available, you should give them a try. Add a few to your box of spinners and spoons and see what happens. ◻



The Complete Spinfishing Trout Angler's Vest

by Mike Bleech

Why do you think trout fishing vests have all those pockets? Not to be fashionable, I assure you. Trout are fussy critters. And in Pennsylvania streams, you are dealing with three different trout, each with its own preferences.

Large photo-Mike Bleech; inset photo-Art Michaels

A trout anglers' vest is like a tool box. Whatever you need has to be there when you need it. Organizing your fishing vest with all of the necessary gear is the first step to enjoying a successful trout season.

Hooks

Perhaps it is because hooks are such basic fishing tools that many anglers do not think much about them. But in fact, it is because they are such basic fishing tools that we should put a lot of thought into them. If you attend a professional baseball game and watch the players warm up, notice what they do. Shortstops catch ground balls. Home run hitters swing the bat. Pitchers pitch. They do not practice trick plays–they practice the basics.

Similarly, you should put the most effort into the basics. What hooks should you use? Are there specialized hooks for any of the baits you use? Are your hooks the proper size for your baits? Are the hooks sharp?

Do not be satisfied with just any hooks. Hooks are made in many styles and sizes for good reason. Baitholder hooks, for example, work great with nightcrawlers or red worms, but they tear up smaller grubs. For grubs, plain fine-wire hooks are better. The guideline for hooks is to use hooks that do minimal damage to the bait, and which add minimal unnatural appearance to the bait.

Size 10 baitholder hooks should cover your worm fishing needs. For maggots, size 12 fine-wire hooks will suffice. You will also need salmon egg hooks that can be completely buried in whichever salmon eggs you use. Four sizes ranging from 8 to 14 should be adequate. Split-ring double or treble hooks and a bait needle will make your salted minnows more effective. Try size 10 if you use treble hooks, or size 8 if you use double hooks. Treble hooks are also used with artificial "putty baits." These baits will not last long on single hooks. You could carry a few closed-eye trebles for this purpose, but if you already have split-ring treble hooks, they will suffice.

Splitshot

Splitshot should handle all of your sinker needs. I like those splitshot wheels that contain several different shot sizes. Wheels keep your splitshot organized and take up very little precious vest space.

In a typical trout stream, you should be changing your shot several times. I often change shot a few times in just one pool. This is most critical early in the season when baits and lures should be very close to the bottom. Trout generally do not move far to feed in cold water. You should fish pools thoroughly. In a pool that may vary in depth by four or five feet, and where current changes considerably, there is no way you can cover it all with the same weight on your line.

Be sure to carry the removable type of splitshot.

Bait

Take a lesson from fly anglers who understand that trout can be extremely fussy eaters. Carry a large assortment of bait. This might include grubs, salmon eggs, worms, salted minnows and artificial baits. You might narrow this list if you know specifically which trout inhabit the water you plan to fish.

"Garden hackle"–plain old red worms–are the universal trout bait. They are natural food, even though trout that have never seen a worm eat them readily. Worms have traditionally been carried in a belt container. This is a good option, but you do not really need a container as bulky as typical worm boxes. A smaller container that fits in a vest pocket will carry all the worms you need for a day of trout fishing. The best worms for stocked trout are small. The only times you might need nightcrawlers are when you are fishing specifically for big brown trout.

Grubs are also universal trout bait. They are even more natural, at least in appearance, than worms. About the only times trout see worms are when they are washed into streams by rain runoff. Grubs typically sold at bait shops–maggots, wax worms and meal worms–are not actually normal trout food, but they look like some of the insect larvae that inhabit trout streams. I prefer maggots because they are the smallest of the common baitshop grubs, closer to the size of caddis worms that are found in many of our streams.

photo-Mike Bleech

Salmon eggs are often the most effective bait for rainbow trout. They can also be effective on brook trout and brown trout. Brook trout seem especially drawn to red salmon eggs. Rainbows can get very fussy. Some years it seems there is a hot egg that works everywhere. Then the next year you can't get a trout to look at those same eggs. More often, one particular type of egg is hot for a while, and then another egg gets hot. There are cheese eggs, shrimp eggs, corn eggs and plain salmon eggs. There are yellow eggs, orange eggs, pink eggs, green eggs, red eggs, white eggs and, well, salmon eggs of virtually any color. The more you carry, the better your odds of having what the trout want at any given moment, on any given stream.

Salmon eggs offer a big advantage over most natural baits. They do not spoil quickly. They can even be held from one year to the next if they are not exposed to extreme cold or heat. With a few jars of salmon eggs in your fishing vest, you are always ready for trout fishing. The same can be said for the artificial "putty baits."

If you fish streams that are stocked mostly with brook trout, be sure to carry a pack of salted minnows in your fishing vest. Brookies often attack salted minnows when they show absolutely no interest in anything else. Brown trout also go for salted minnows.

If you keep your fishing vest out of direct sunlight and extreme heat, salted minnows, salmon eggs and putty baits will last a long time. Nevertheless, store your worms and grubs in the refrigerator between fishing trips.

Artificial lures

Bright colors are just what you need for trout, at least early in the season. Later, when the streams get lower and warmer, natural colors will probably get better results.

Start with a selection of spinners. My all-around favorite is a gold Colorado or Indiana spinner blade with orange dressing on the treble hook. I also have a lot of luck, especially in stocked lakes, with a silver willow leaf blade and white hook dressing. But you will not catch me trout fishing without several other combinations. A little bit of bright red on a gold spinner blade is great for brook trout, and yellow hook dressing sometimes turns poor days into good days.

You should understand one of the reasons for using different spinner blade shapes. Generally, the more round ones, called Colorado blades, or oval-shaped ones, called Indiana blades, spin at slower retrieve speeds. The long, thin blades, called willow leaf blades, require faster retrieve speeds. They run deeper and work better in swift current.

Tiny spoons are at their best in larger streams, and in lakes where longer casts are beneficial. The first thing you should understand about spoons is that they should wobble instead of spin. If your spoon spins, you are using the wrong spoon. Like spinner blades, the shape and weight of spoons determine how deep they run, and how fast they should be retrieved. Your ability to put together a selection of spoons to cover the broadest range of conditions determines the effectiveness of the spoon pocket in your fishing vest.

In addition to shapes, color selection is important. Carry a few that are plain gold and plain silver. Combinations of gold with red or orange are excellent for brook trout and brown trout. Combinations of silver with red, green, blue and chartreuse tend to be effective for all trout. Your spoon selection will put you in good shape if you visit one of the Lake Erie tributaries for steelhead, or one of our larger creeks and rivers for brown trout. ⌂

Casting Lines

with Dave Wolf

April Showers May Bring May Flowers

I went looking for the answers. It was yet another opening day of trout season–a time when I found the crowds too dense, the trout too fresh from many hatcheries and a sport I no longer recognized.

I had been one of the many faithful who stood in the icy currents of opening day. And most often I fished the northern counties when ice gathering on the line was not all that uncommon. But I was older, and one would assume wiser, when I toted the camera bag my wife and I would use to photograph the "event."

Opening day was a traditional event that was once a get-together, a celebration that the winter had passed.

Like the critics of all events where the space allotted becomes far too crowded for our kind, I have taken simply to staying away until the crowds disperse. Fortunately, we are able to do so because of the length of the trout season.

So with the knowledge that trout season does not really come into being until elbow room increases, I set forth trying to capture a special day that has escaped me. I was missing something–an attractant as strong as a juicy nightcrawler to trout of the swollen waters.

I was an old dog with a mindset that was sprung last April–I had found new reason in opening day and a dramatic change in what I had noted in the past. My eyes started moving from the camera viewfinder to the participants. What I found would change my mind forever.

It did not take long for me to note that the circle of anglers was expanding. Recruitment of youth into the fishing world was well in hand at most of the places I chose to photograph. There were at least as many–no, more–young fishermen than old in my haphazard survey...a growing concern in most outdoor sports.

What I found were generations of anglers, three and four deep. Grandfathers, fathers, sons and grandchildren. I found a talkative young girl, around age six, who was still excited about a strike she had three hours earlier. She had caught no trout by 2 p.m., but that did not at all dampen her spirits. Her father and grandfather were taking her to yet another stream, and even though it was raining and chilly, she was like a child on Christmas morning.

If the trout stream seemed like a playground at recess, no one seemed to care. Trout filled some creels, but not all. One young man beamed proudly over the hefty golden rainbow trout he had taken on a stream nearly 50 miles away and at least five hours earlier.

The day was cold and dreary, but the participants were not. What I saw was not hordes of anglers trying to take a quick limit so that they could get off the stream as quickly as possible. I witnessed an all-day event, full of mentors and a willing troop of youth eager to follow. I saw caring fathers and mothers who had brought their children streamside for this special day. I was amazed to note that the children came willingly–bright-eyed and with the vigor only youth could display.

If there were disgruntled youth along the stream, I did not see them. And I had both eyes wide open all the time. I did not come to find icing on a cake. I came to find reasons, bitter or sweet. What I found in the honesty of youth was sweet–no bitter complaining about not catching a limit or taking smaller trout than they had hoped. It was then I found that horrid gap that I have so desperately tried to avoid–the generation gap.

The complaints I have heard over the years came rolling from the lips of my generation and the one before me. "It just ain't like it used to be." "Trout are getting smaller every year."

On this day, I found anglers old and young having fun. I stood amazed as youngsters' laughter and excited chatter filled the brisk April day. I saw hope and a future in children, and I found little stress and anxiety in the adults who seemed to have fallen prey to the modern-day plague.

I went home with a new respect for opening day, happy to see the results of the efforts of so many coming forth to bear fruit. I had witnessed and had partaken in opening day, and even in poor conditions for photography, I could see that we have come a long way in educating our youth to the joys of fishing.

We have somehow passed onto them that the day is measured not by the weight of the creel but by the experience. I had missed that because of my fishing persuasion. I had a bad taste in my mouth for far too long concerning opening day because I had removed myself from its depths.

And I now know that the opening day of trout season may be playing an instrumental role in the future of sport fishing. Furthermore, I now believe that April showers may bring May flowers.

A Burnt-Wing Blue Dun

by Chauncy K. Lively

In the realm of fly fishing, the name "Blue Dun" seems to have a special resonance. It is one of those familiar, comfortable names everyone recognizes because it has been around for such a long time. In 1800, the Englishman George Scotcher wrote of a mayfly he called the Blue Dun and depicted it in a color illustration that unfortunately showed it with eight legs! It eventually shed its superfluous gains and now enjoys the same six-legged status as its fellow mayflies.

In England, the Blue Dun refers to a Baetis species that doesn't exist in the U.S. It was one on a long list of mayfly names we imported and attached randomly to some of our own mayflies. I have heard its name used by anglers in reference to as many species as the Blue-Winged Olive. However, in recent years we seem to have become more serious about pinpointing its identity and have pretty much settled on *Paraleptophlebia adoptiva* as its banner-bearer.

P. adoptiva is a small, early season mayfly common to most eastern and midwestern trout streams. Its size may vary slightly from stream to stream, and in the parlance of the fly fisher it may range from size 16 to 18. A size 17 would be a good average, but because hooks of that size are difficult to come by in the U.S., we'll settle for size 16. In appearance, *adoptiva* could almost pass for an undersized Hendrickson, with three tails, mahogany-brown body and dark, dun-colored wings.

Following a long, cold winter, the little Blue Duns are a welcome sight to the early season angler, because when conditions are right they may precede the first dry fly fishing of the new season. They deserve a place alongside wild flowers and robins as true harbingers of spring.

Water temperature plays a major role in determining whether trout will pick Blue Duns from the surface or intercept the nymphs as they rise upward to emerge. I have watched with frustration as flotillas of little lead-winged sailboats floated past in 40-degree water without so much as a wink from a trout. Here the limestone streams clearly hold an edge. Their constant springs have a moderating effect on stream water temperatures. When the air is cold and the freestone streams show temperatures in the low 40s, the limestones are apt to be in the 50s–a big difference when considering the probability of finding trout feeding on the surface.

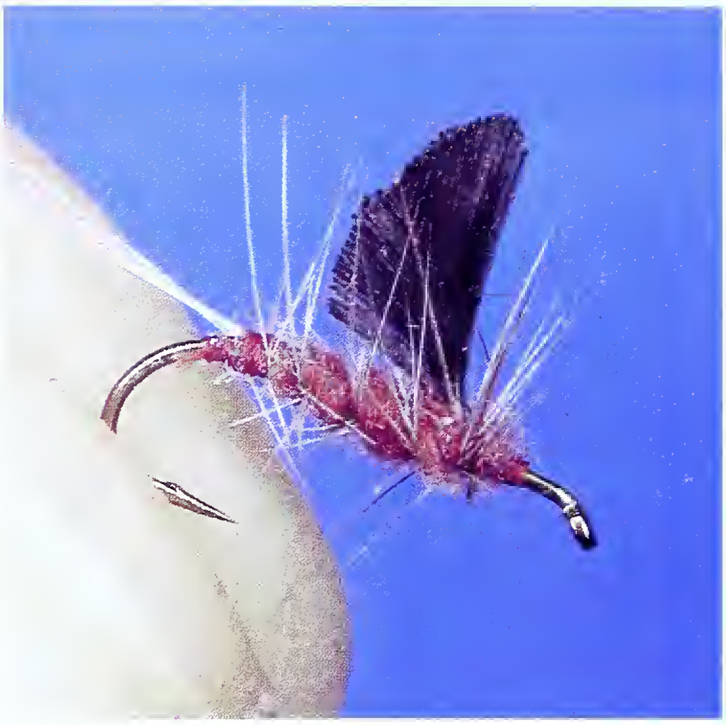


photo-Chauncy K. Lively

The Burnt-Wing Blue Dun is a dry fly with reverse-palmer hackling and full-shaped wings burnt from webby hen back feathers. The wings are of the Iwamasa design, in which the feather is angled in the burning tool so that the bottom fibers on the right of the stem are aligned with the leading edge of the burner. In the finished wings the feather ribs extend diagonally over the width of the wings instead of along their length. The result is less weight and more pliancy. Before mounting the wings, I like to spray them lightly with an artist's fixative to enhance their durability.

Sometimes the mounted wings become disturbed during dressing by the winding of hackle or dubbing, giving them a disheveled appearance. This is easily corrected by gently stroking the fibers toward the wing edges with the fingertips. Similar correction will often be required following the release of a fish. However fragile these wings may appear, they are surprisingly tough when dressed with care.

In other burnt-wing patterns we have discussed on these pages in the past, we mounted the wings with concave sides together to produce a single upright wing. However, in the Blue Dun the wings are mounted with convex sides facing and angling away from each other. I prefer the latter wing style when palmer hackling is used.

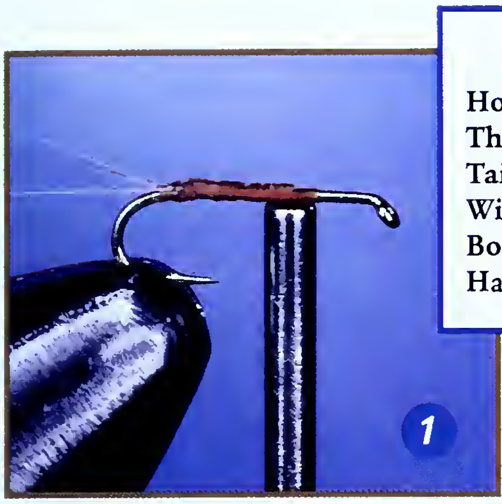
The front-to-rear palmer hackling we use in the Blue Dun positions the barbules in the same posture as the legs of the mayfly pattern, creating a similar light pattern in the surface film. It is a posture that conventional rear-to-front hackling does not achieve. The hackle should be wound in spaced turns–not closely wound as in dressing a Bivisible.

A single genetic hackle will suffice, but if imported hackle is used, two will be required. The hackle(s) should be mounted in front of the wings with the dull side toward the eye. Most hackles are slightly concave on their dull sides and when so mounted will produce the desired light pattern when wound. Trimming the wound hackle on its underside lets the fly float low.

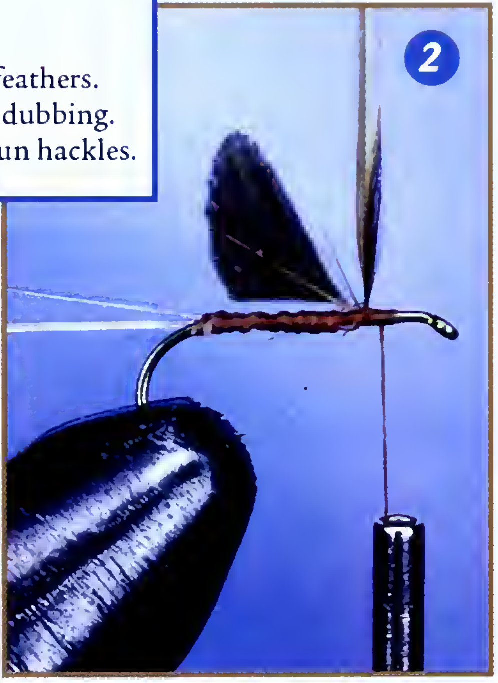
Whip-finishing the thread underneath the base of the tails is not as difficult as it may appear. It must be done by hand. Just imagine you are whipping behind the eye, but now you must wind the loop around the entire fly. However, if you still have problems, use three or four half-hitches and apply cement.

Dressing: Burnt-Wing Blue Dun

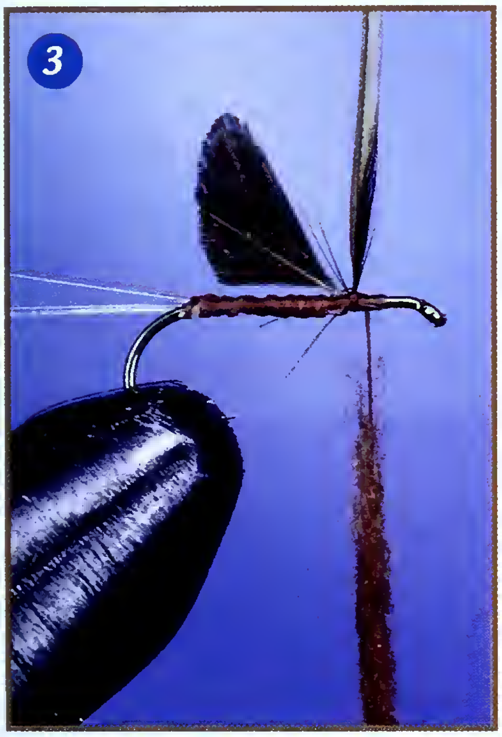
Hook: Size 16, regular shank, fine wire.
Thread: Brown 6/0 prewaxed.
Tails: Three gray synthetic tail fibers.
Wings: Burnt to shape from two dun hen back feathers.
Body: Medium-brown natural or synthetic fur dubbing.
Hackle: One genetic or two imported medium dun hackles.



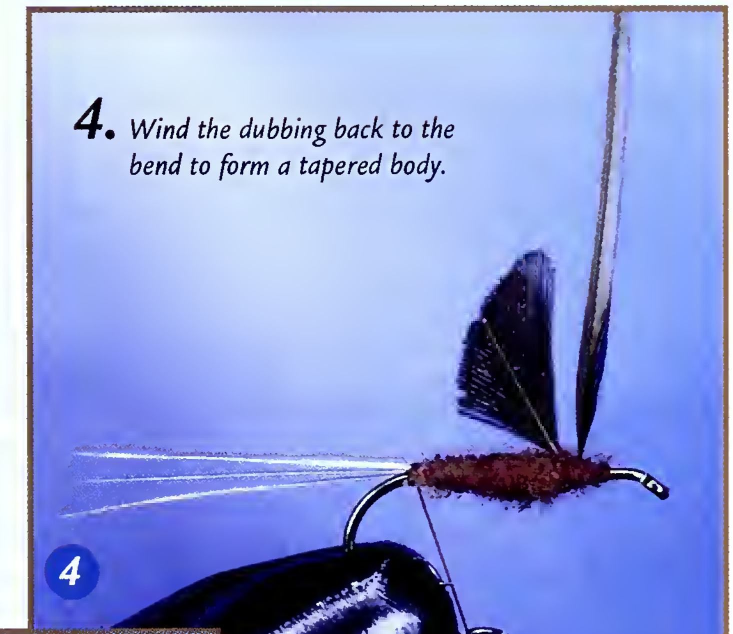
1. *Tie in the thread behind the eye and wind back to the bend. Tie in the tail fibers and wind between to separate the tips. Wind the thread forward 2/3rds of the shank length.*



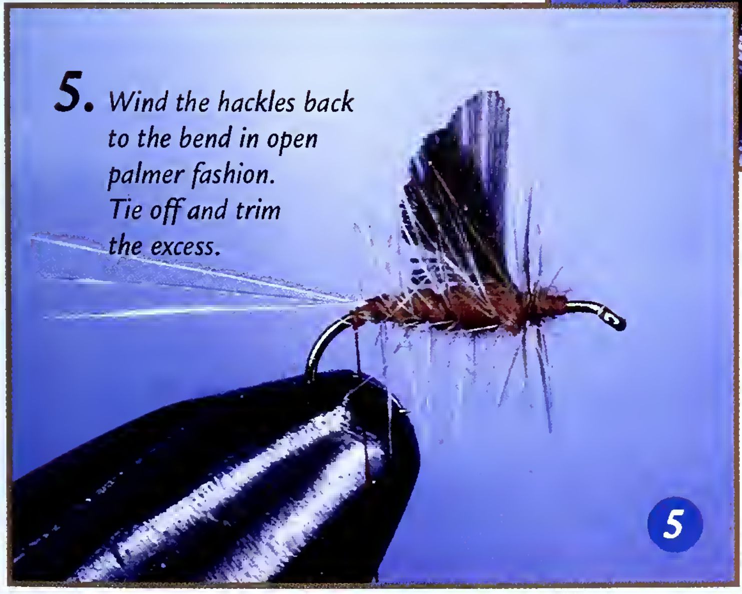
2. *Form a matching pair of wings and tie them in together by their stems. Select hackle(s) with barbs as long as twice the gape length. Mount vertically with the dull side(s) toward the eye.*



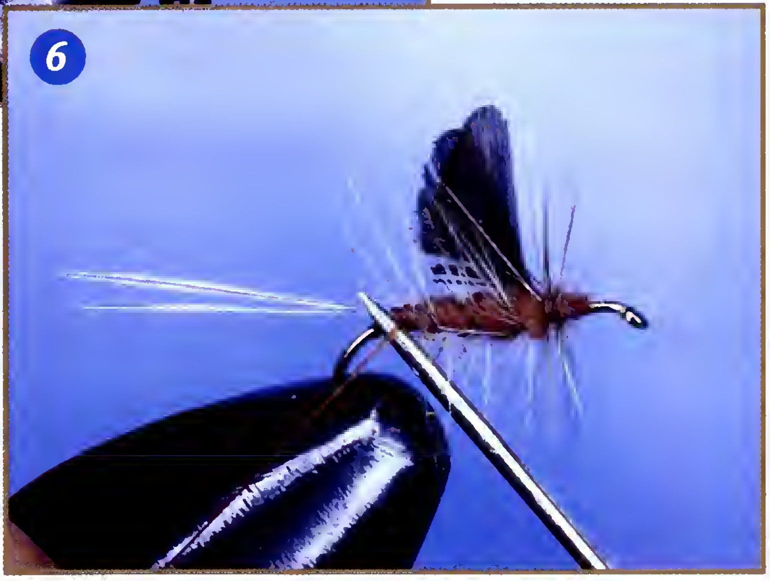
3. *Wax a length of the working thread and apply dubbing.*



4. *Wind the dubbing back to the bend to form a tapered body.*



5. *Wind the hackles back to the bend in open palmer fashion. Tie off and trim the excess.*



6. *Whip-finish the thread underneath the base of the tails and apply cement to the finish windings. After trimming the hackle underneath the body, the fly is completed.*

photos: Chauncy K. Lively

The Swatara Creek Water Trail

by Jo Ellen Litz

Do you want to combine water, good food, recreation, open space, history, culture, scenic beauty and geology into a one-day trip? We have you covered. Canoeing the "Swattie" is like exploring a wilderness. One of the only ways to tell where you are is by knowing the bridges that cross the stream.

The Swatara Creek Water Trail is a 14.6-mile segment of the Swatara Creek from Jonestown to Union Canal Canoe Rentals—both in Lebanon County. Don't be surprised to see farms and barns, Union Canal locks, forested riparian buffers, the abandoned Lebanon to Tremont Railroad and bridge, Harper's Tavern, and the only lava deposits in the state. If you want to stay in the area overnight, try the Swatara Creek Inn. Fort Indiantown Gap, the national cemetery, and historic Lindley Murray/Conrad Mill are a great hike from the water.

North to south, here are some of the sites you can expect to see:

· Just east of Route 72 and north of Jonestown, the Lebanon Water Authority draws water from the Swatara.

· Sallie's Place is a small restaurant near the starting point that will soon reopen as an Italian Restaurant.

· On the west bank at the Lebanon to Tremont Railroad bridge are the only lava deposits in the state. There is a sharp cliff along the railroad bed. The lava is a few hundred feet down the old rail bed.

· Along the entire creek you can see remnants of the Union Canal, operated 1828 to 1884. The canal once connected the

photo-Jo Ellen Litz

The Swatara Creek Water Trail is a 14.6-mile segment of the Swatara Creek from Jonestown to Union Canal Canoe Rentals, in Lebanon County.

photo-Jo Ellen Litz

Susquehanna River at Middletown with the Schuylkill River at Reading, following the Swatara and Tulpehocken creeks. The old towpath is still visible in many areas. You can also find remains of locks. Suggested by William Penn, the canal was surveyed in 1762. Much coal and iron ore were transported by way of the canal.

· Just east off of Ono Road, Water Works was a community built to support the canal. The weighmaster's house was used as a headquarters for the Union Canal at Water Works. A "weigh wall" still stands where boats were tied for weighing the freight loads of the Union Canal boats. An old icehouse that stored ice cut from a dam provided employment for canal workers in the winter.

· To the west of Ono Road near Water Works is the Fish & Boat Commission Water Works Access, created in partnership with Swatara Creek Watershed Association (SCWA).

· Near Route 934 north of Annville, Harper's Tavern was an 1804 stagecoach stop on Old Route 22 between Allentown and Harrisburg.

· The old "general store" is the building next to Harper Tavern and is currently a doctor's office.

· Just north of Harper's Tavern, Conrad's Mill still sells feed. On June 7, 1745, the site was the birthplace of Lindley Murray, a famous grammarian and author. Robert Murray, Lindley's father, owned the mill from 1745-1746. For a time, the site was known as Shuey's Mill.

· A little farther north, Fort Indiantown Gap Military Reservation was authorized in 1929. The first land was bought in 1931. It was first used by the National Guard in 1932. Total acreage is now more than 16,000 acres. A national cemetery is also housed at the Gap.

· To the west of Harper's Tavern on Old Route 22, the Swatara Creek Inn is a three-story Victorian mansion built in 1860 for Jacob Ulrich. From 1917-1941 Milton Hershey, who used it for a boys' home, owned the mansion. Today, the structure is a bed and breakfast inn.

· At the end of the run, along Black's Bridge Road, you will find Union Canal Canoe Rentals, owned by Bill and Ruth Wise. In addition, you can camp, golf or explore an old canal lock. At Halloween there's even a haunted trail.

The time it takes to complete this segment varies with water depth and your paddling skills. For water depth/flow, check out the Swatara Creek Watershed Association's website at www.mbcomp.com/Swatara. If you prefer to go with an organized group, on the first Saturday in May, the Swatara Creek Watershed Association does a float and cleanup. We usually have around 100 participants. This specific water trail segment is cleaned up every four years. Visit our web site to find out more about this segment or the entire 91-mile length of Swatara Creek and its other canoe segments.

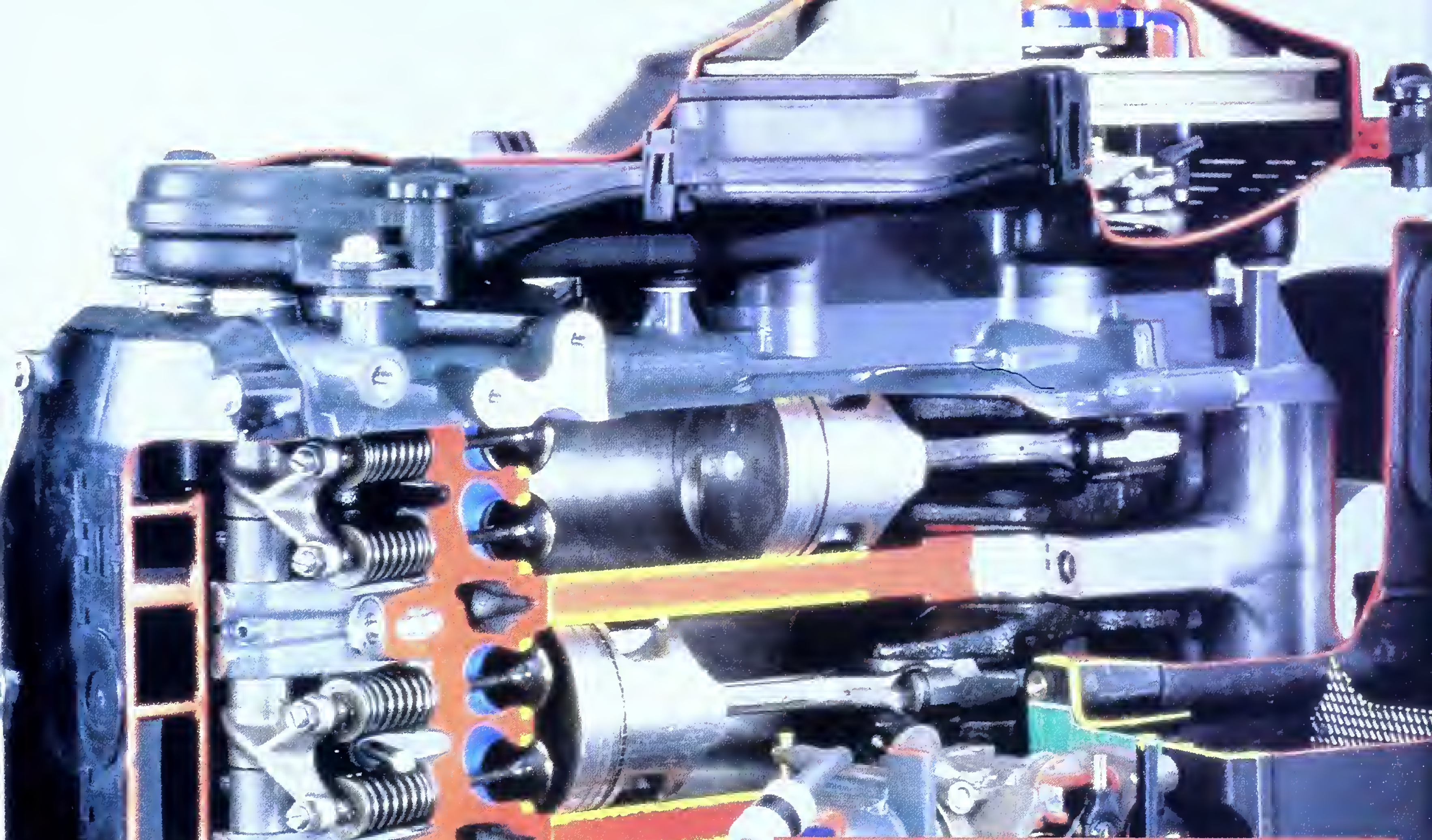
Access

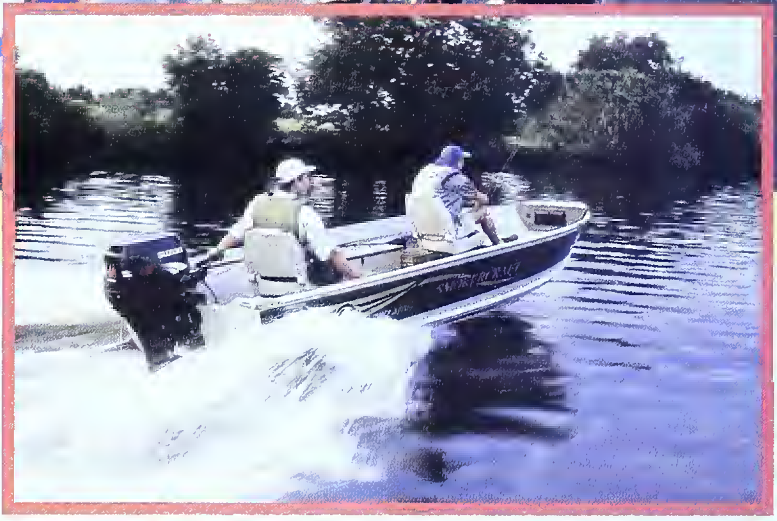
· The Lebanon Water Authority property in Jonestown.

· The Commission Water Works Access, created by SCWA at Ono Road near the Water Works.

· Union Canal Canoe Rentals near Black's Bridge Road.

Jo Ellen Litz is president of the Swatara Creek Watershed Association and a Lebanon County commissioner.





large photo–Honda Marine; small inset photo–Suzuki Marine

The New Outboard Engines

by Alex Zidock Jr.

There is a wide choice of very good outboard motors available for Pennsylvania boaters. Today's modern engines are packed with technology that has been developed in the last five years. Engine manufacturers forced their research and development teams to come up with engines that meet the United States Environmental Protection Agency's (USEPA) proposed emissions standards. In addition, manufacturers have leveled the playing field by introducing better warranties and offering more inclusive, extended-service programs.

One of the most important choices purchasers of new outboard engines have today is whether to go with the enhanced versions of the old two-stroke engines or with the popular four-stroke models. Two-stroke engines are those in which the gas and oil are mixed either by the operator before the fuel is added to the gas tank or by a direct injection process where oil is held in a separate reservoir. The gas/oil mix lubricates the working parts of the engine.

Four-stroke engines are like automotive engines. The gas and oil never mix, except by accident or malfunction. In fact, one outboard engine manufacturer's newest model has the same pistons, rods and crankshaft as one of the company's automobile engines. The block is different to meet outboard design specifications. It used to be that the four-cycle engines burned much cleaner than their two-cycle cousins, but modern technology such as direct fuel injection, electronic fuel injection and digital fuel injection have cleaned up the two-stroke's act.

Honda

Honda Marine has never built anything except four-stroke engines. So it's no surprise that all of its 2000-year model outboard motors are four-strokes with a 130 hp at the top of the list. The biggest problem four-stroke engines had to overcome over the years was their weight-to-horsepower ratio. Traditionally, the four-strokes are heavier than their two-stroke cousins of the same horsepower. But if your boat can handle the weight, what you gain is a quiet, smooth and environmentally friendly outboard that meets or exceeds the 2006 federal emissions requirements.

Evinrude/Johnson

OMC (Outboard Marine Corporation) offers a full lineup of two-stroke and four-stroke engines under the Johnson and Evinrude banners. According to OMC, the new Ficht(tm) Ram Injection technology has revolutionized direct fuel injection (DFI). "Ficht" is the name of the company that developed this new technology, which OMC bought. Direct fuel injection, the engineers say, has an advantage over older carbureted two-stroke engines because the newer DFIs produce over 80 percent less hydrocarbon emissions and offer improved fuel economy. They use up to 50 percent less lubricating oil, run smoother and practically eliminate exhaust smoke. Marketed under the Evinrude brand will be a new 25 hp four-stroke engine that will join other four-stroke engines in the 4 hp to 50 hp class.

Mercury/Mariner

Mercury Marine is offering Digital OptiMax outboard motors, which are now compatible with their new SmartCare system. Some long-shaft configurations for offshore V-6 use have been added as well as new 6, 75 and 90 hp four-stroke models. A 40 hp model has also been added to satisfy the needs of pontoon boat owners. The engine features an oversized heavy duty gear case. This allows for the use of a larger propeller that provides higher thrust for increased maneuverability, holding and stopping power for heavier craft.

OptiMax DFI two-stroke technology, which has been around for a couple of years, and now the Digital OptiMax, allows these engines to communicate with the Mercury SmartCare system. This system consists of two advanced gauges (Smart Tach and Smart Speed), which provide engine, boat and environmental information that used to require up to seven gauges, as well as advanced engine monitoring and control.

Nissan/Tohatsu

New this year for Nissan/Tohatsu will be 4 hp, 9.9 hp and 15 hp four-stroke engines. A 50 hp direct-injection outboard engine will be introduced later in the year, and a 90 hp direct-injection model is scheduled for introduction in the model year 2001.

Tohatsu Corporation manufactures outboard motors for Nissan Marine ranging from 2.5 hp to 140 hp; this is the only relationship between the companies.

Suzuki

Suzuki Marine has introduced two new four-stroke models for 2000. The 25 and 30 hp offer a newly designed three-cylinder, single-overhead-cam powerhead. Two intake valves and a single exhaust valve for each cylinder increase horsepower and torque. These four-strokes include a chain-driven valve train with hydraulic adjuster that has proven to provide reliability and durability in other Suzuki models. Among other features you'll find on the tiller models is a front-mounted linear steering adjuster that lets the operator tighten or loosen steering movement without tools. If you prefer two-stroke motors, Suzuki has engines from 5 hp to its V-6 225, which meet or exceed the EPA 2006 emissions requirements.

Yamaha

Yamaha has introduced High Pressure Direct Injection (HPDI) two-stroke outboards for 2000. HPDI is featured on seven all-new motors in 150 and 200 hp ratings, including counter-rotating versions for dual installations.

To understand Yamaha's take on its system, you have to understand that conventional two-stroke carbureted engines deliver the fuel/oil mixture up from the bottom of the cylinder. The exhaust port is partially open as the piston moves up, compressing the fuel/oil charge. This mixture then goes up and around the piston to get to the top of the cylinder head for combustion. Some of the mixture escapes through the partially open exhaust port. The spark plug can fire only after the piston completely covers the exhaust port. Yamaha engineers say that as a result of this process, some fuel efficiency is lost.

In direct injection engines, the oil still comes in from the bottom of the piston, but the fuel is delivered by way of the fuel rail and injectors from the top of the piston under pressure from 90 to 250 psi. The engine is designed to wait until the exhaust port is closed before firing. The precise amount of fuel can be delivered at the right time. The big difference in Yamaha's HPDI system is that the fuel is pressurized to 700 psi, before atomizing, which Yamaha says allows for a more complete burn.

Yamaha has added a new 115 hp to its four-stroke lineup featuring an in-line four-cylinder with multi-port fuel injection, dual overhead cams, four-valve long-track induction system with silencer, and front air intake.

Yamaha offers models from 2 hp to a 3.1-liter fuel-injected 250 hp engine.

With all of the variations of direct injection technology applied to two-stroke engines, and with the improvements made to four-stroke engines, modern outboard motor manufacturers have a lot to offer boaters over the outboard engines of just a few years ago. Older engines smoked and dumped oil into the water and hydrocarbons into the air through exhausts that contained unburned fuel and oil. With USEPA emissions restrictions getting stricter, both the environment and outboard users will benefit. Newer outboard engines burn fuel a lot cleaner, they are a lot quieter and easier to start, and they're more reliable and more fuel-efficient. Even though the selection of outboard motors in the marketplace has grown, the difference between what was available just five years ago and what's available today is amazing.

Pennsylvania Fish & Boat Commission

ANNUAL REPORT

PFBC Annual Report Executive Summary and Financial Statement Highlights of Fiscal Year 1998-99 (July 1998 through June 1999)

The Pennsylvania Fish & Boat Commission's mission is to provide fishing and boating opportunities through the protection and management of the Commonwealth's aquatic resources. Because Pennsylvania is home to one of the largest and most diverse water systems in the nation, meeting that mission is no small feat. The Commission's activities take on many forms, from law enforcement and managing fish populations to producing publications on how and where to enjoy angling opportunities and offering boating safety instruction. It would take another 12 months to detail all the Commission activities over a single year, but some special highlights included:

- An 18-month special investigation into the illegal trafficking of Pennsylvania reptiles and amphibians concluded at the start of the fiscal year. Fish & Boat Commission waterways conservation officers arrested an Allegheny County man after he attempted to buy bog turtles, a Pennsylvania endangered species. He was charged with 21 counts after a subsequent search of his home uncovered some 100 illegally obtained and possessed turtles, snakes and reptile eggs.

- The Commission adopted a regulation requiring the operators of a specialized type of watercraft to earn and carry a boating safety education certificate. Under the regulations, which took effect in January 2000, operators of personal watercraft–small, scooter-like boats sometimes known better by brand names such as Jet Ski®, Wave Runner® and SeaDoo®–must carry a boating safety education certificate with them on the water. The Commission issues the certificates to individuals who pass an approved safety course.

- After extensive public hearings, the Commission approved a new year-round bass fishing season at its fall 1999 quarterly meeting. Under the new approach, anglers will be allowed to harvest some bass in the summer, much as they may under the familiar "open season" regulations. But harvest would be limited through the fall and winter. The reduced harvest period is followed by a catch-and-immediate-release-only period in the spring. In addition, the new structure regulates the bass fisheries in rivers and streams differently from the bass fisheries in lakes and ponds. The intent is to maximize fishing opportunities by allowing angling throughout the entire year, while affording bass populations adequate protection from increased fishing pressure.
- Drought in the fall forced the Commission to stock 14,000 trout earlier than anticipated. The fish, which were earmarked for stocking into ponds and lakes during the winter stocking program, were released into those waters early when low flows to the Commission's Pleasant Gap Fish Culture Station created a water shortage.
- Longtime Bureau of Law Enforcement Director Edward W. Manhart retired in December 1999, ending a 30-year career with the agency. He began with the then-Fish Commission on June 3, 1968, as a "fish warden" and later became the agency's first bureau director for law enforcement. Along the way, he became nationally known for his progressive ideas and emphasis on enforcement training.
- The calendar year ended with 978,162 fishing licenses sold. The number was a slight increase over 1997 sales, but it was the third consecutive year during which fewer than one million licenses were sold.
- The Bureau of Law Enforcement prosecuted some 11,688 cases in 1998. Another 39,943 warnings were issued for violations of the Fish and Boat Code.
- A new record total of 348,393 watercraft were registered in Pennsylvania by the end of 1998. Unfortunately, 10 boaters lost their lives in accidents during the year. Even though one death is too many, there were eight fewer fatalities during the period than the previous year.
- In March 1999, the Commission began a total drawdown of Tamarack Lake, a 562-acre impoundment under its control near Meadville, Crawford County. The drawdown allowed for needed repairs to the dam. Along with the construction work, the Commission conducted one of the largest fish salvage operations in its history. Working around the clock, Bu-

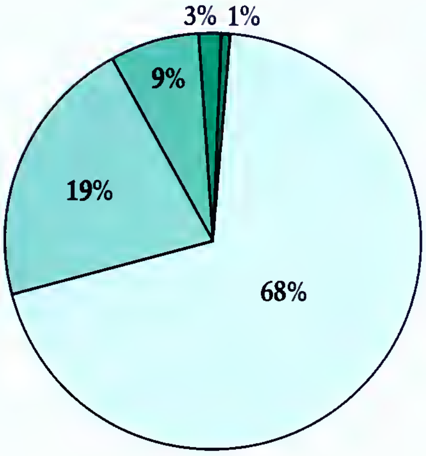
reau of Fisheries personnel were able to salvage some 450 muskies, 1,000 walleyes, 6,300 largemouth bass and 25,135 pounds of panfish. The fish were stocked in nearby waterways.

- The Commission's "Day at a Hatchery" at the Linesville Fish Culture Station was successful. The popular early spring open house showcased fish-rearing techniques, fisheries management tools, basic casting skills and clinics. New interpretive signs for a self-guided tour of the facility were also unveiled.
- A total of 2.3 million adult trout were stocked between March 1 and April 16 in 890 waterways across the Commonwealth. The traditional opening day (which in 1999 was April 17) was nearly marred when the Commission learned that samples of trout taken in the fall showed low levels of PCBs. Fortunately, samples of trout stocked in the spring of the year showed that there was no need for consumption advisories. Thanks to speedy lab work, the Commission was able to announce the good news before the opener.
- Speaking of trout, staff and commissioners traveled across the state, conducting two public meetings to hear what anglers had to say about a proposed reduction in the trout creel limit. Hearings were also conducted to gather public input. The new five-trout regular season creel limit was approved in July 1999, and it took effect in 2000.
- Ground was broken for a new PFBC headquarters facility in a ceremony May 12, 1999. When completed, the building will replace the overcrowded and inadequate rented facilities the Commission currently occupies. The building will consolidate all of the Harrisburg-area headquarters functions in one 62,000-square-foot location. The building will have three floors with office, public meeting, warehouse and graphics production facilities all under one roof. The building should be completed in May 2000, with occupancy by June.
- National Safe Boating Week was observed May 22-28, 1999. The theme was "Boat Smart from the Start: Wear Your Life Jacket." The idea reminded boaters that the best life jacket in the world is completely worthless if it's not worn when needed.

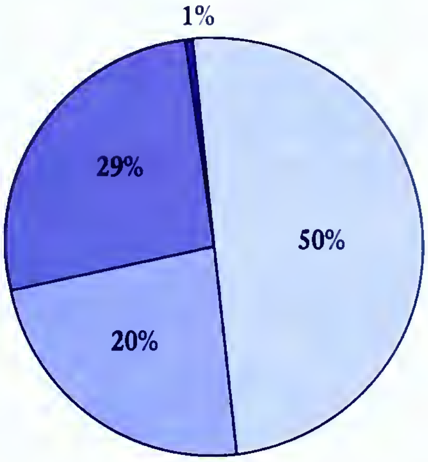
Pennsylvania Fish & Boat Commission Financial Report for Fiscal Year 1998-99

(July 1, 1998, through June 30, 1999)

Ross E. Starner, Comptroller



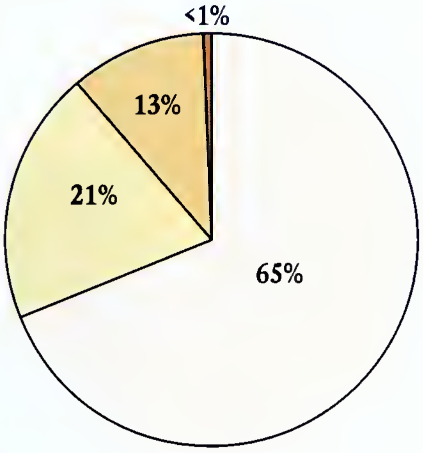
FISH FUND



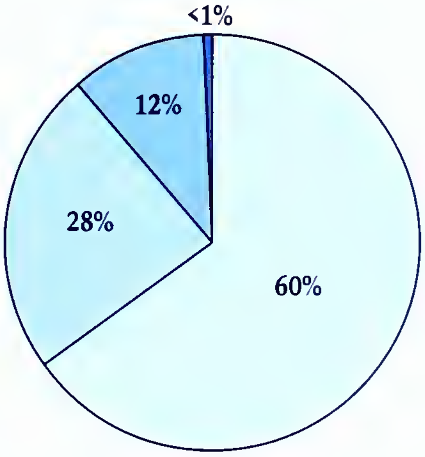
BOAT FUND

Total Fish Fund Revenue	$29,429,430	100%
Licenses and Fees	$19,994,289	68%
Fines and Penalties	$292,463	1%
Reimbursement from General Fund	$798,000	3%
Miscellaneous Revenue	$2,569,895	9%
Augmentations	$5,774,783	19%

Total Boat Fund Revenue	$10,323,213	100%
Licenses and Fees	$5,122,593	50%
Fines and Penalties	$164,023	1%
Miscellaneous Revenue	$2,942,791	29%
Augmentations	$2,093,806	20%



FISH FUND



BOAT FUND

Total Fish Fund Expenditures	$29,321,452	100%
Personnel Services	$19,130,714	65%
Operational Expenses	$6,146,874	21%
Fixed Assets/Capital Improvements	$3,764,604	13%
Grants and Subsidies	$279,260	<1%

Total Boat Fund Expenditures	$9,755,393	100%
Personnel Services	$5,828,569	60%
Operational Expenses	$2,728,005	28%
Fixed Assets/Capital Improvements	$1,164,547	12%
Grants, Subsidies, Adjustments	$34,272	<1%

Amounts are rounded to the nearest whole dollar. Percentages are rounded to the nearest whole number.

PLAY

SPRING
2000

Pennsylvania • League • of • Angling • Youth

April Showers Bring May Flowers, and Walleyes, Trout and Bluegills...

If you like fish, or like to fish, you better like rainy days! Just as the spring flowers need rain, so do fish. You see, fish (and humans, too) need water to survive. That water falling from the sky is one step in an important cycle. It's the **WATER CYCLE**. This issue of the PLAY newsletter focuses on water and the water cycle.

Remember that water can be a solid (ice or snow), liquid or gas (water vapor). Water moves through the cycle and changes forms. Here is how it works. Rain and snow are water that falls to the ground. Rain and snow are called **PRECIPITATION**. This falling water comes from clouds in the sky. Water in clouds comes from water that evaporates. It **EVAPORATES** from a lake, or a puddle. Heat from the sun causes evaporation. Plants also give off water vapor. We call that **TRANSPIRATION**. Water vapor rises into the sky. The vapor cools and becomes a liquid. This is called **CONDENSATION**.

When rain falls or snow melts on the Earth's surface, it has to go somewhere. Gravity makes some water run off the surface. This is called **RUNOFF**. The water runs off into streams, lakes and rivers. Some water soaks into the ground. This is called **PERCOLATION**. The Earth's surface is like a sponge, too. This sponge can hold lots of water. That water is called **GROUNDWATER**. Groundwater comes back to the surface as springs, streams and lakes. Runoff and groundwater reaching the surface evaporate. The water rises and condenses, and the cycle begins again.

The water cycle doesn't move that quickly, though. Water on Earth is stored for thousands of years in oceans, ice caps or in groundwater. It may take thousands of years for a single water drop to make it through the cycle.

Water Cycle Words

EVAPORATION	When liquid water becomes a vapor.
TRANSPIRATION	When plants give off water vapor.
CONDENSATION	When water vapor collects and cools to liquid.
PRECIPITATION	When rain or snow falls to the ground.
PERCOLATION	When water soaks into the ground.
RUNOFF	When water runs off the ground's surface.

Wildlife Forever State-Fish Art Contest Entry Form

Important for teachers: *If part of a classroom project, please fill out teacher and school information before duplicating and distributing to students. Duplicate and glue to back of artwork.*

Entry Deadline: Postmarked by March 31. Addressed to:
Wildlife Forever, State-Fish Art Contest, 10365 West 70th Street, Eden Prairie, MN 55344

Grade *Check one*	☐ 4th	☐ 5th	☐ 6th	☐ 7th	☐ 8th	☐ 9th	☐ 10th	☐ 11th	12th
	Group I			Group II			Group III		

Please Print or Type

Contestant ______________________________
Last Name First Name Birthdate

Home Address ______________________________
Street or P.O. Box

____
City State Zip

Telephone (   ) __________ (   ) __________
Home Parent Daytime

Art Entry Title ______________________________

Composition Title ______________________________

Fish Species ______________________________

Medium Used ______________________________

Contestant's Teacher ______________________________ (   ) __________
Last Name First Name School Phone

School Address ______________________________
School Name (Full)

____
Street or P.O. Box

____
City State Zip

I hereby certify that this is my original work and is not a copy of published photographs, magazines, book illustrations, or other materials protected by copyright laws. I understand that Wildlife Forever and other sponsors are not responsible for loss or damage to my artwork and/or composition. I grant exclusive right to Wildlife Forever and its designees to utilize my artwork and/or composition for reproduction and promotional purposes, and to display my art; also, I agree that my artwork and/or composition may be used, altered, or published as they see fit without compensation to me.

Signature of Student ______________________________
Date

Signature of Parent or Guardian ______________________________
Date

Entry questions should be directed to StFishArt@aol.com or by calling 877-FISHART. Artwork must be 9 x 12" HORIZONTAL; no more than ¼" thick; do not mat or frame; do not have lettering or borders on the front.

CONSERVE 2000
PROTECT PENNSYLVANIA'S WATERS

PA's Official State Fish
Brook Trout

Wildlife Forever State-Fish Art Contest Rules & Regulations

How to Enter

PENNSYLVANIA FISH & BOAT COMMISSION

PA's Official State Fish
Brook Trout

Completed portfolios must be postmarked by March 31 of each year. Portfolios must include:

- A completed entry form.
- Artwork of participant's state fish.
- 1-page composition about participant's state fish, its habitat, or efforts to conserve it.
- Entry forms must be completed, signed, and glued to the back of the original artwork.

Completed entries should be mailed to:

Wildlife Forever, State-Fish Art Contest, 10365 West 70th Street, Eden Prairie, MN 55344

Rules & Regulations

- The State-Fish Art Contest is open to children in grades four through twelve attending public, private, or home-schools in the United States. Only one entry per child will be accepted.
- Portfolios will be judged on the quality of the artwork.
- The artwork must call attention to the official fish of his or her home state. If the home state has two state fish, then the contestant may design either fish. If the home state does not have an official fish, that state's fisheries department has selected an alternative fish species. The fish **must** be depicted in its natural underwater habitat. Information about each state fish is available on the internet at http://www.statefishart.com or on America Online (Keyword: fishart).
- All artwork must be the contestant's original, hand-done creation. **Photographs and computer-generated artwork will not be accepted.**
- All artwork must be 9" x 12" and *horizontal*, without a mat, frame, cover sheet, or border. Art techniques may include scratch-board, pointillism, chalk, charcoal, dry brush, watercolor, crosshatch, lead, collage, linoleum printing, or crayon. (Please note: if contestants use chalk, charcoal, or lead they should seal it with an adhesive).
- All artwork must not exceed ¼ inch in total thickness.
- No lettering, signatures, or initials may appear on the front of the artwork. Any artwork with such identifying characteristics will be disqualified and eliminated from the competition.
- Completed portfolios **must** include a typed composition or theme paper not to exceed one page in length. Compositions should be related specifically to the characteristics of the state fish, its habitat, behavior, or efforts to conserve it. The composition must include the student's name and address.

Prizes

- All contestants will receive a certificate of participation.
- Final judging will take place on **Earth Day** of each year. Winners will be announced the following week.
- Three winners from each state will be selected, one winner per grade group (4-6th, 7-9th, 10-12th) for a total of 150 winners — 50 states x 3 winners = 150.
- All winning designs will be displayed at the Mall of America in Minneapolis, Minnesota at the Wildlife Forever State-Fish Art Expo in June.
- All winning designs will be presented online at http://www.statefishart.com and on America Online (Keyword: fishart) for one year.

The Fine Print

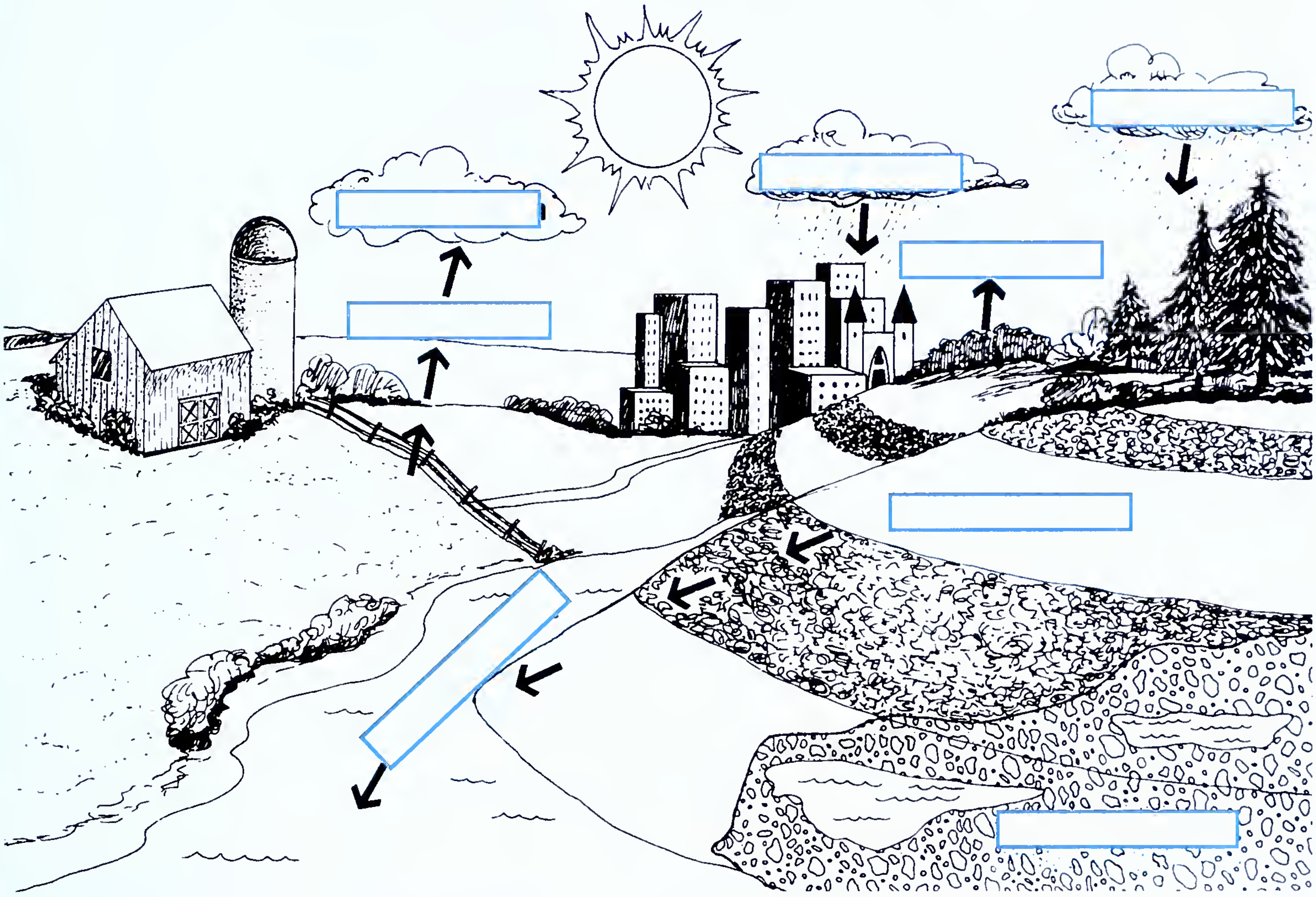
- The State-Fish Art Contest is not open to the immediate relatives of Wildlife Forever employees or participating sponsors.
- It is the contestant's responsibility to inform Wildlife Forever of any change of address.
- Contestants living in Washington D.C. may use either the Maryland or Virginia state fish in their portfolios.

Wildlife Forever:

- Has the right to use the name of any State-Fish Art contestant without compensation.
- Retains ownership of all artwork entered in the contest. In order to promote the Wildlife Forever State-Fish Art Contest, products such as posters, prints, T-shirts, etc. may be produced from winning artwork. Any monies realized from the sale or licensing of the artwork will be used to support the contest, wildlife conservation, and education initiatives. The winning artists must provide an autograph without charge to Wildlife Forever.
- Retains all winning entries until June 1of the following year and will return the winning entries to the students in June upon request.
- Will return all non-winning entries upon request after August 31 if the student provides a self-addressed 10x13-inch envelope and a $10 processing fee (a check, not cash, made out to "Wildlife Forever").
- Reserves the right to destroy unclaimed entries one year after the contest.
- Will not insure entries it receives or be responsible for loss or damage of the entries.

What Do You Know About the Water Cycle?

Label the Parts of the Water Cycle



Water Cycle in PA

Pennsylvania receives an average of 41 inches of precipitation each year. Where does that water go?
The total must equal 41.

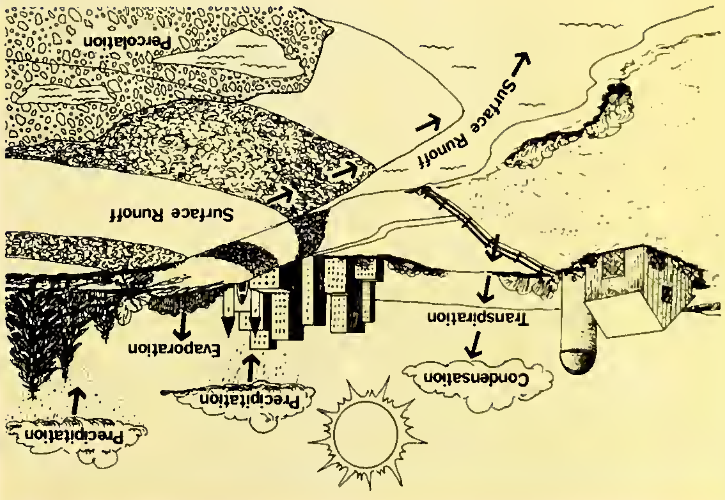
Evaporation & transpiration ____ inches

Run off ____ inches

Percolation ____ inches

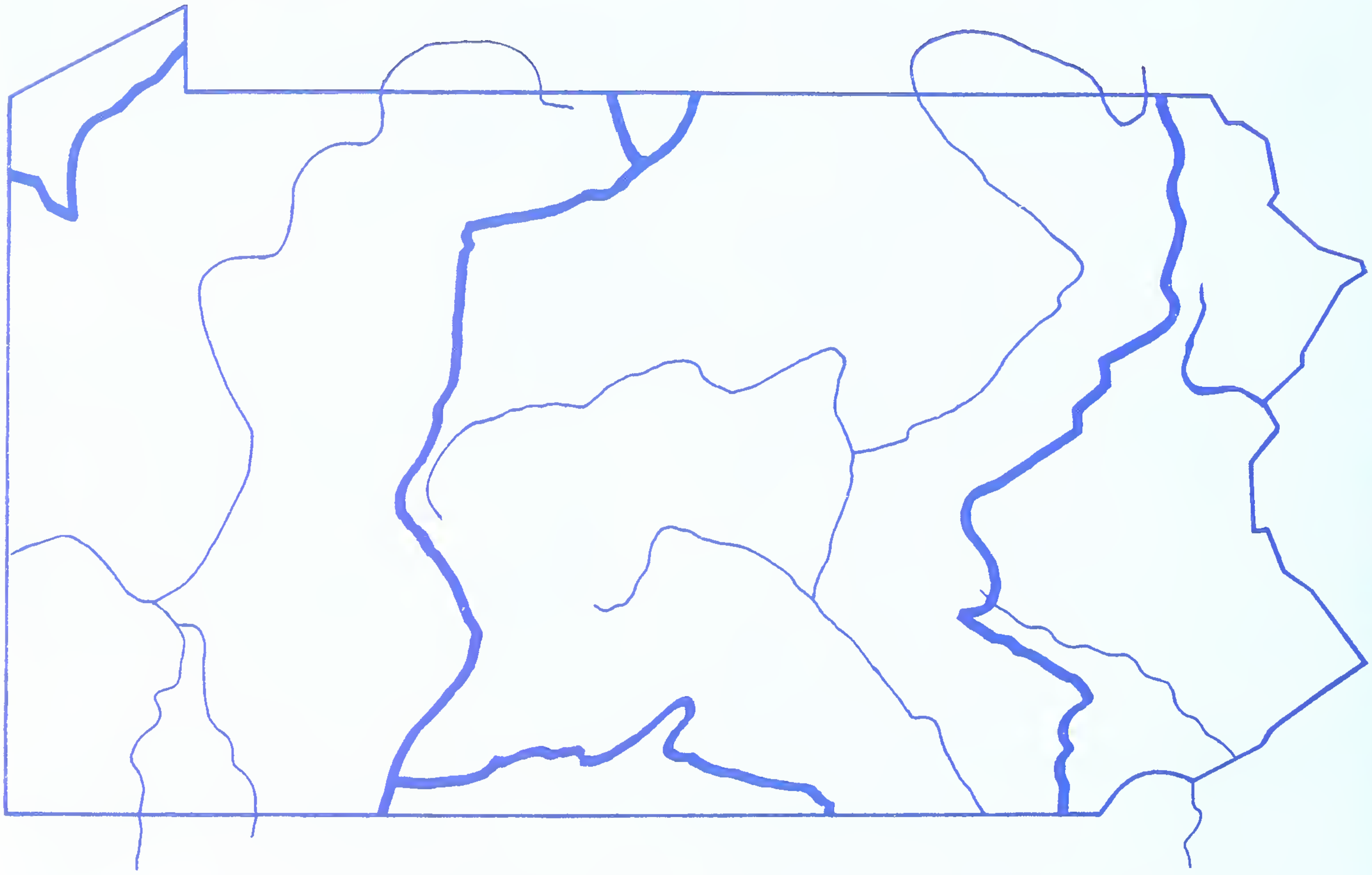
Total 41 inches

Answer
Evaporation & transpiration= 20"/year
Runoff= 6"
Percolation=15"



Six Ways to the Sea

When precipitation falls onto the land, it soaks into the ground or runs off. Gravity pulls the water that runs off into channels or streams. These little streams flow into bigger rivers or lakes. That water eventually flows into even bigger waterways—oceans. The land this water flows from is called a watershed. The rain that falls on Pennsylvania goes to the ocean six different ways. That is because there are six major watersheds in Pennsylvania.



Actually, the water eventually ends up either in the Gulf of Mexico or the Atlantic Ocean. It gets there by way of six different watersheds. Those watersheds are Lake Erie, Ohio River, Potomac River, Genesee River, Susquehanna River and Delaware River. Water falling on Pennsylvania leaves by one of those watersheds. All but Lake Erie are drained by large rivers. The six major watersheds include smaller watersheds. Label the rivers on the map above, the six major watersheds, and their contributing smaller watersheds.

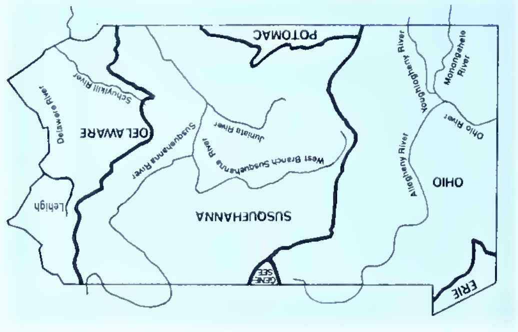
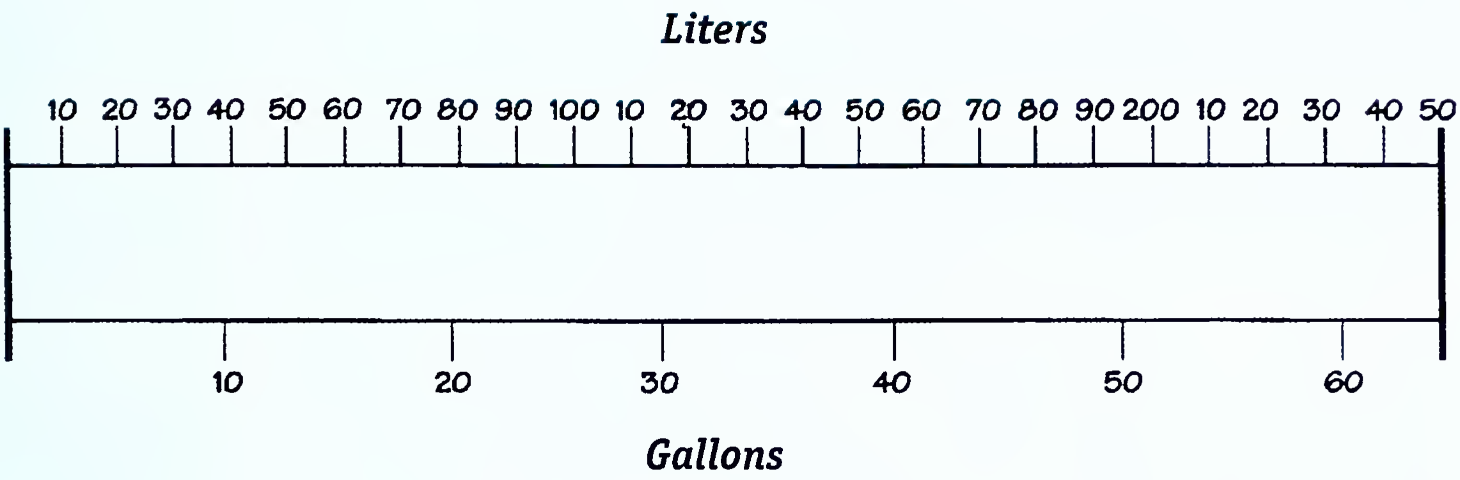


illustration-Rose Boegli

How Much Water Do You Use?

You and fish have something in common. You both need water. There is one important difference, though. You can make choices about how you use water. The choices you make may influence fish and fishing. *How much water do you use in one day?* Use the graph below and chart how much water you use in one day.

Personal Water Meter



Activity

Drinking water= 1/8-gallon
Flushing toilet= 5 gallons
Brushing teeth with water running=2 gallons
Dishwasher=20 gallons/# people in your house
Dishwashing by hand (water running)=30 gallon/# people in your house
Dishwashing by hand (with stopper)=10/# people in your house
Load of laundry= 40 gallons/# people in your house
Shower/bath= 5 gallons/minute water is running.

How much water did you use in one day?

How much water do other family members use in one day?

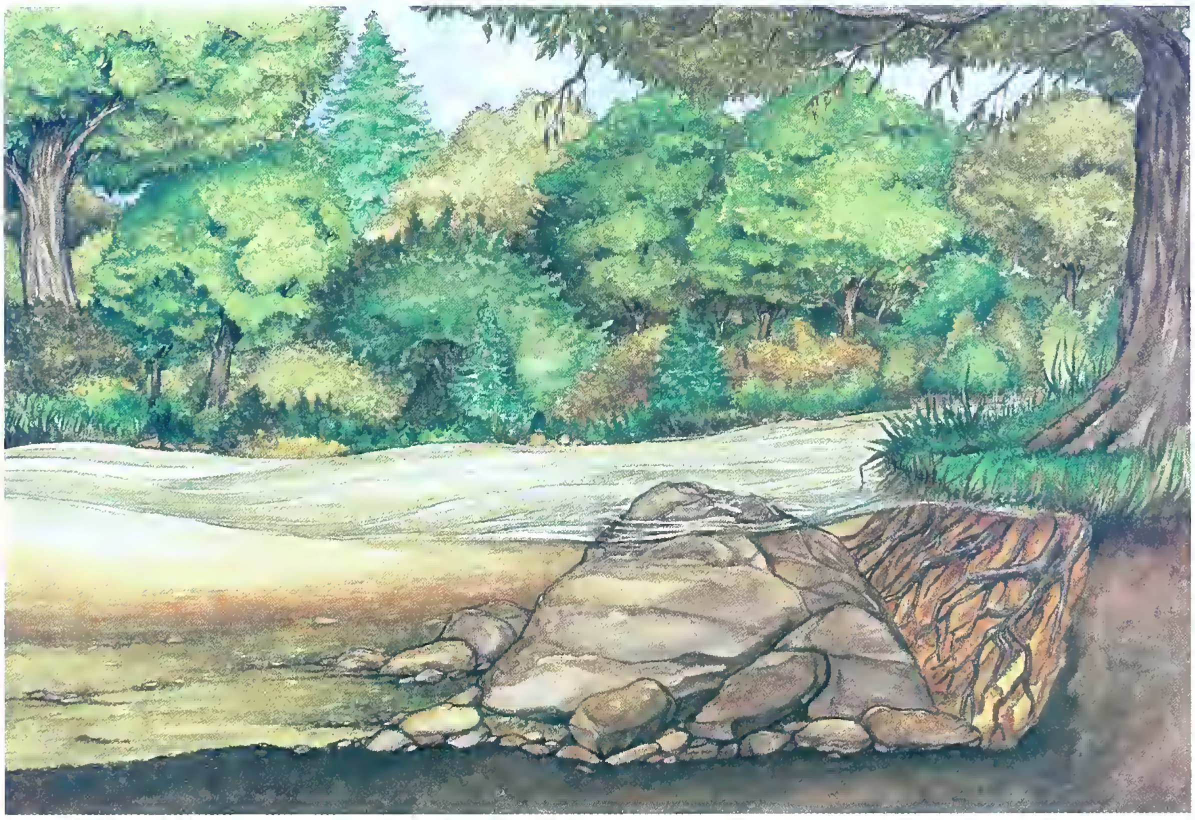
What action could you take to conserve water?

Adapted from "Water Meter," an activity from Project WET: Water Education for Teachers, *copyright 1995, the Watercourse and the Council for Environmental Education, Bozeman, Montana.*

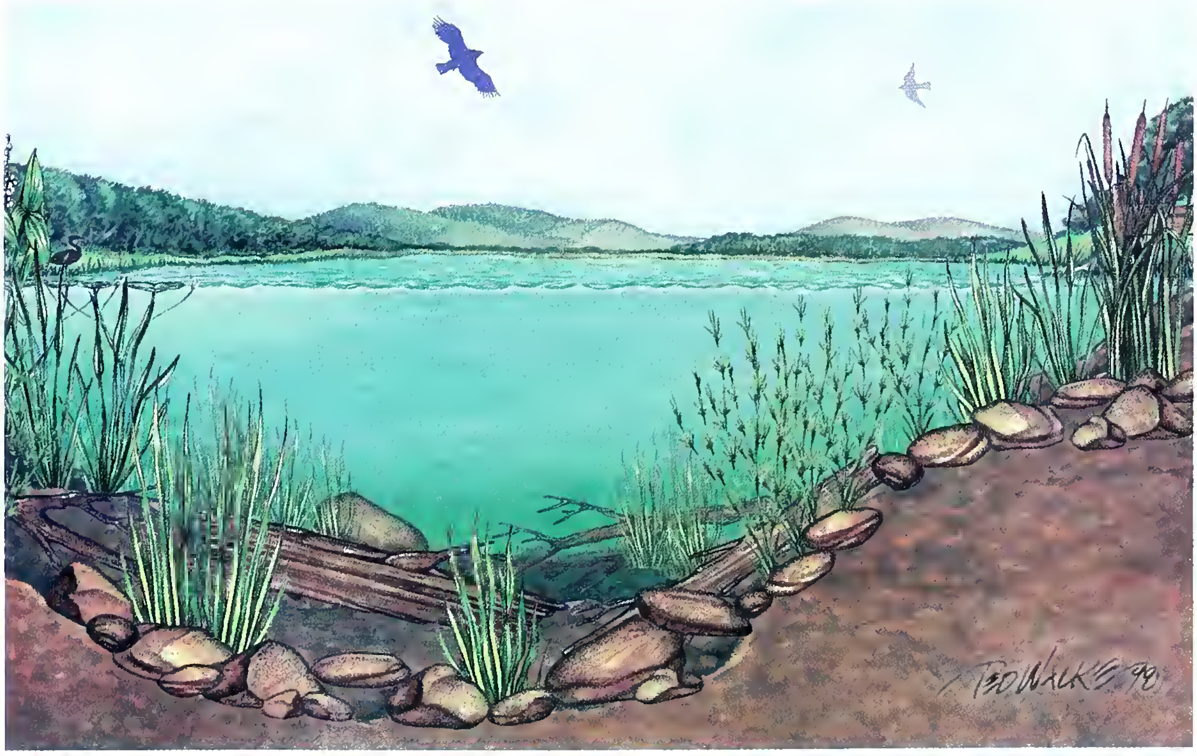
Read the Water

Can you read a stream? Experienced anglers can look at the water and figure out where fish are likely to be found. They know about the needs of the fish they are chasing. For example, fish like trout and smallmouth bass need protection from current. These anglers look for places that offer shelter from the current. Test your knowledge of fish and reading the water. Put the fish where you think they would be found.

Stream

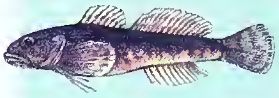


Pond



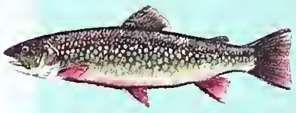
Directions:

In the habitats below, draw in the fish where you would expect to find them.



Sculpin: Hugging the rocky bottom of a small stream.

Brown trout: Hiding in the roots of an undercut bank.



Brook trout: Waiting in the calm water behind a rock.

Chain pickerel: Hiding in weeds of a pond.

Bass: Chasing crayfish near the rocky shoreline of a pond.

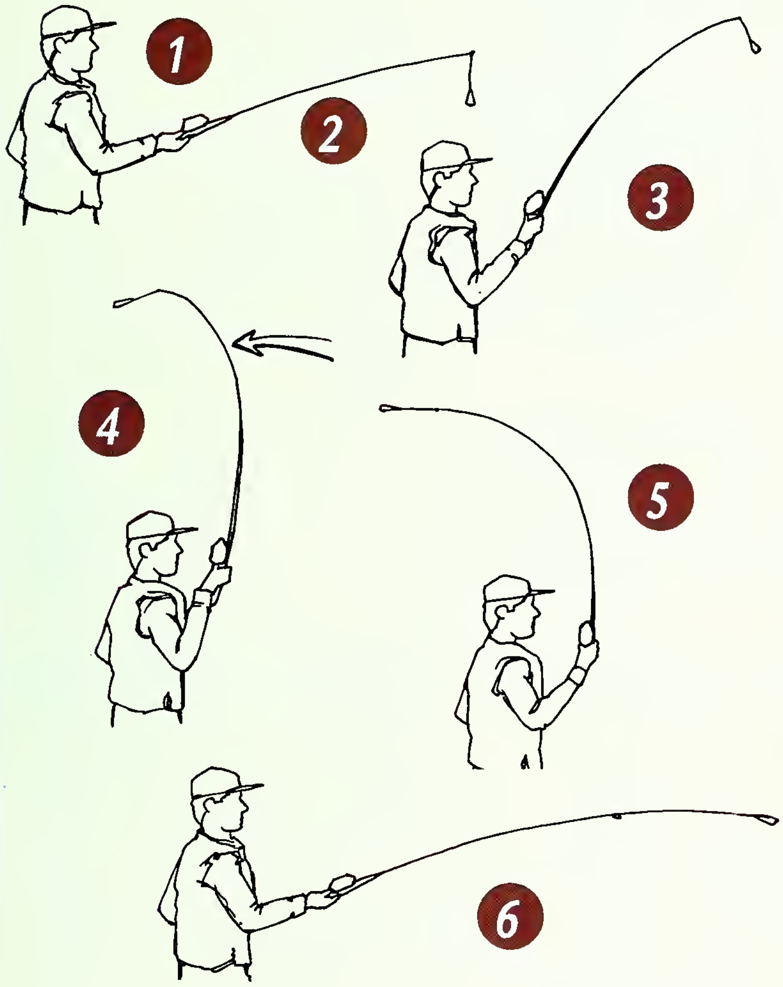
illustration-Ted Walker

Casting Basics

Casting is an important fishing skill. Like any skill, the only way to get better is to practice. Don't coaches and teachers say "Practice makes perfect"? Do you follow these steps in making overhead and sidearm casts?

Overhead Cast

1. Reel in slack line, so the lure or hook is three to six inches from the rod tip.
2. Point the rod tip toward the target.
3. Quickly pull the rod straight back, and stop the rod when it's above you, at the 1 o'clock position.
4. Immediately start the rod forward.



5. When the rod is at the 10 o'clock position, release the line. When using a spincasting reel, lift your thumb off the button. If you are using spinning gear, lift the finger off the line pinched between the finger and handle.
6. Be sure to keep the rod tip pointed at the target until the lure or bait reaches it. This is called "follow-through."

Fixing Your Cast

- Does your cast go ***splat***, and fall short of the target? You have let go too late! Try letting go earlier.
- Does your cast go straight up above you and fall short of your target? Then you have let go too soon. Try letting go a little later.

Sidearm Cast

1. Reel in slack line, so that the lure or hook is three to six inches from the rod tip.
2. Point the rod tip toward the target.
3. Quickly swing the rod back to your side, and stop when the rod is just behind you.
4. Quickly swing the rod forward.
5. Release the line as the rod swings forward.
6. Be sure to keep the tip pointed at the target until the lure or bait reaches it (follow-through).

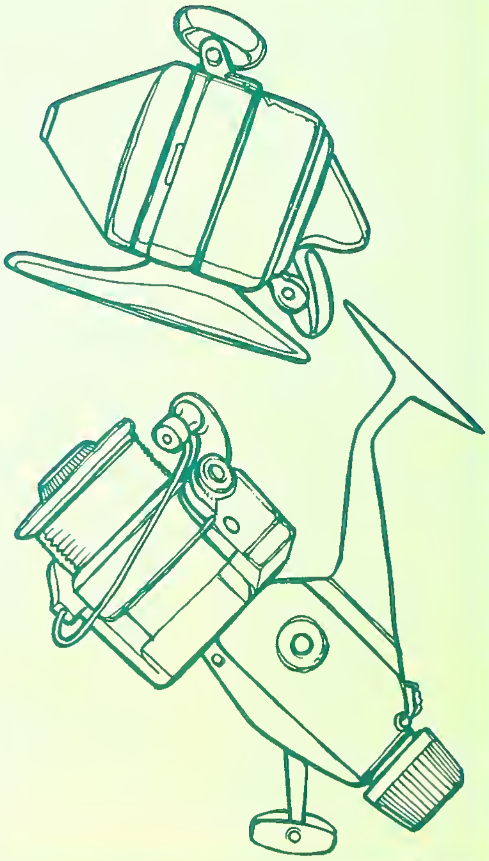
Fixing Your Cast:

- Does your cast go to the left of the target? Then you released the line too late if you are casting with your right hand. If you cast with your left hand, then you released early.
- Does your cast go to the right of the target? Then you released the line too early if you are casting with your right hand. If you cast with your left hand, then you released late.

Shopping for Gear

Anglers today have many equipment choices. Just look at the fishing section in most sporting goods stores. There are many rods! There are almost as many reels! What about all the choices of baits and lures?

Your assignment is to go shopping for a rod, reel, line and lures for fishing a stream for trout. But you must not spend more than your budget allows. **Your budget for this shopping spree is $60.**



RODS

Spinning rod—5', ultralight graphite= $39
Spinning rod—5', ultralight, fiberglass= $19
Baitcasting rod—6' heavy weight, graphite= $69
Spincasting rod—5' medium-light, fiberglass= $19

REELS

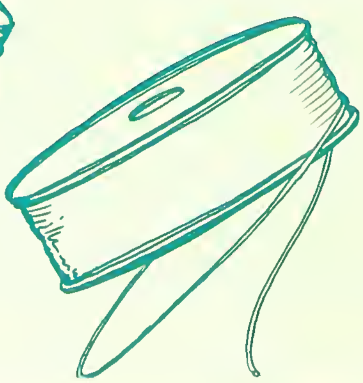
Spincasting reel= $19
Spinning reel—six ball bearings, ultralight= $69
Spinning reel—two ball bearings, ultralight= $29
Casting reel—magnetic drag, five ball bearings= $89

LINE

4-pound-test line—250-yard spool= $4
14-pound-test line—250-yard spool = $4
12-pound-test line—500-yard spool= $15

BAIT/LURE

Spinner—1/8-ounce= $3
Package of 25 #8 baitholder hooks= $2
Package of 10 #1/0 rubber worm hooks= $5
Splitshot, size B= $1
Wax worms, 1 dozen= $2
Jar of salmon eggs= $3



Item	How many?	$
1. Rod		
2. Reel		
3. line		
4. bait/lure		

Total $ ________

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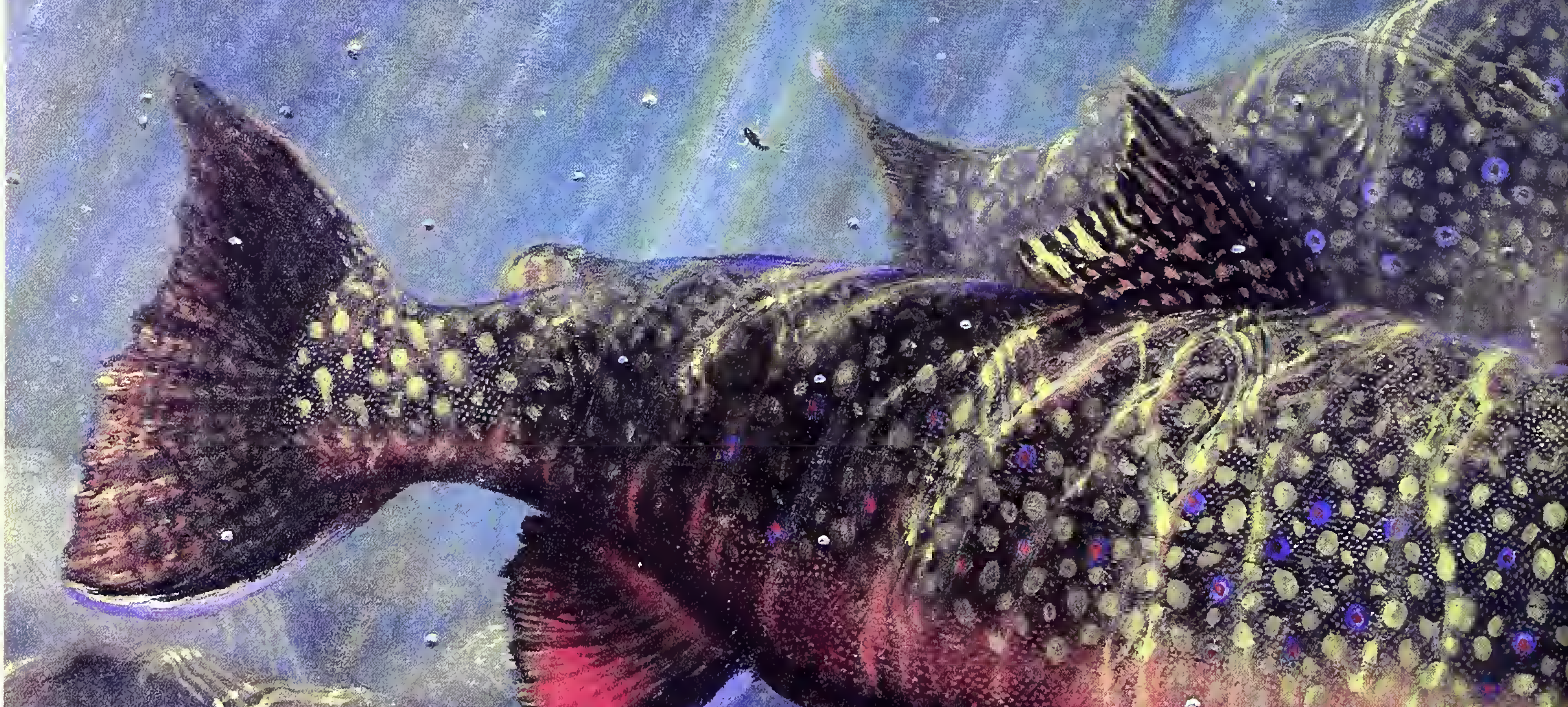
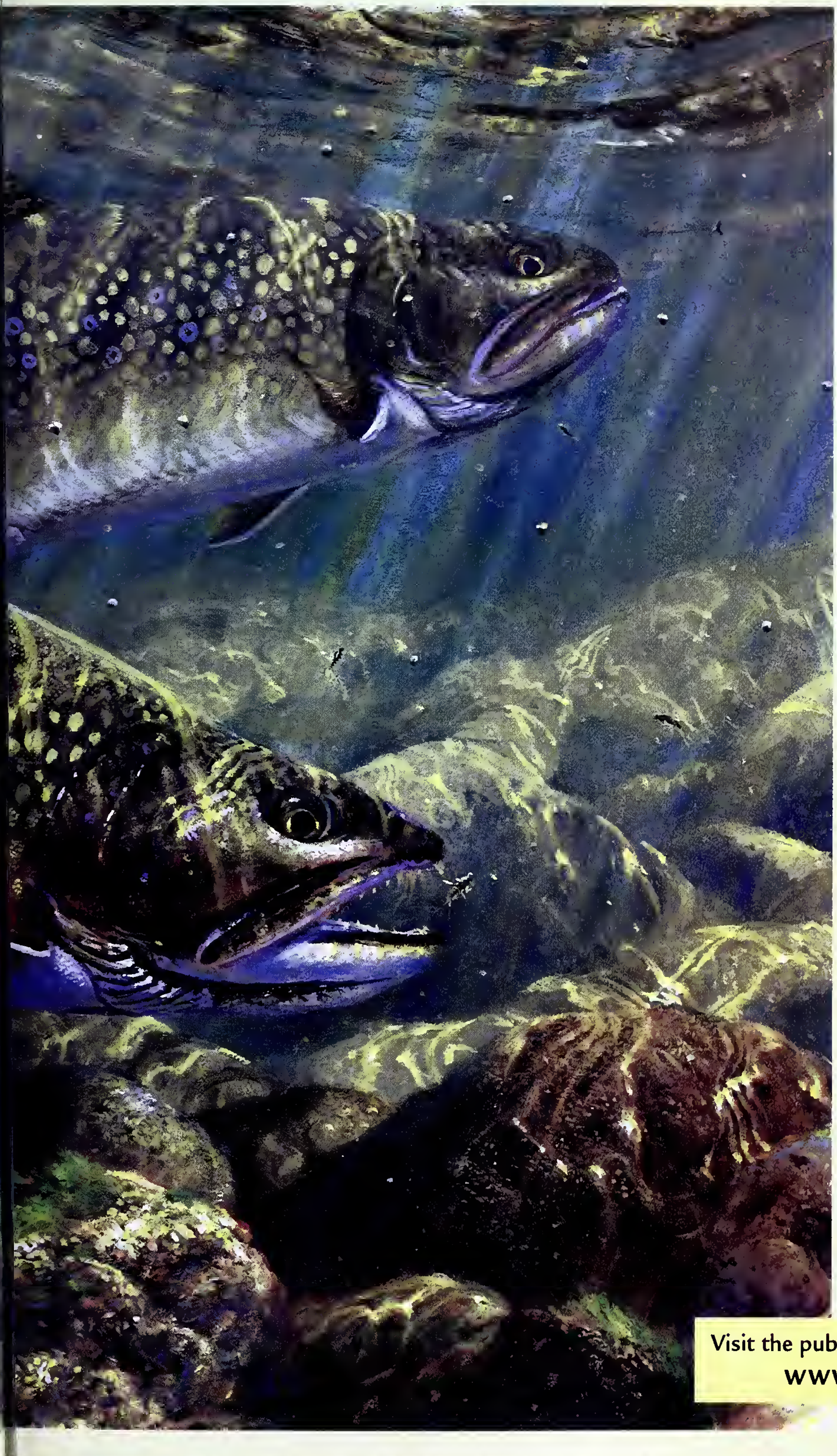
World Wide Web: www.fish.state.pa.us

2000 Trout Stamp Artwork



Brook Trout *by Mark Susinno*

CONSERVE 2000
PROTECT PENNSYLVANIA'S WATERS



The 2000 Pennsylvania Trout Stamp and Print feature the brook trout, painted by artist Mark Susinno. The year 2000 marks the 30th anniversary of naming the brook trout Pennsylvania's state fish. This year is also the 10th anniversary of the trout/salmon stamp program. In 1991, the Fish & Boat Commission began the trout/salmon stamp program with a stunning painting by Mark Susinno. Susinno's newest image is one of the finest brook trout paintings ever.

With his formal artistic training and realistic fishing scenes, Mark Susinno catches the angler's world from every perspective. Susinno's early accomplishments earned him a full scholarship to the prestigious Pratt Institute of New York, where he graduated with highest honors.

Mark Susinno's dedication to fishing and art goes beyond his canvases. He is an active member of Trout Unlimited, the Coastal Conservation Association, and the Potomac River Smallmouth Bass Club. Susinno is also a member of the Society of Animal Artists.

Limited-edition prints and collectible patches are available at galleries throughout Pennsylvania. Information on obtaining limited-edition prints and collectible patches is available from the publisher:

Wilderness Editions
P.O. Box 218
Warriors Mark, PA 16877
phone: 800-355-7645

Visit the publisher's web site:
www.wildernesseditions.com

Year 2000 Expanded Trout Fishing Opportunities

by Tom Greene, Coldwater Unit Leader

New waters

Canawacta Creek, Susquehanna County. A 2.0-mile stream section from the confluence of the East Branch and South Branch of Canawacta Creek downstream to the mouth has been added to the catchable trout program for the 2000 season. Stocking will be conducted preseason only with the planting of brook, brown and rainbow trout.

Clearfield Creek, Cambria County. Recent water quality improvements have led to the addition of a 5.2-mile stream section to the catchable-trout management program. Brown and rainbow trout will be stocked preseason only from the confluence with Beaverdam Run in Ashville downstream to the T-510 bridge near Condron.

Corey Creek, Tioga County. Located near Mansfield, a 2.1-mile stream section from the T-818 bridge downstream to the T-549 bridge has been added to the catchable trout program. Stocking will include the preseason-only planting of brook, brown and rainbow trout.

Indian Lake, Westmoreland County. The addition of this lake to the catchable trout program provides more angling opportunities near a population center where trout angling opportunities are at a premium. Beginning with the 2000 season, this 4.9-acre lake will receive preseason and inseason plantings of brown and rainbow trout.

Muddy Run, Lancaster County. Major restoration efforts on this watershed, in conjunction with a comprehensive streambank fencing program, have led to the addition of a 2.7-mile stream section to the catchable-trout management program. Brown and rainbow trout will be stocked preseason and inseason from the SR 0772 crossing northwest of Intercourse, downstream to the powerline crossing.

Water Works Ponds, Erie County. Located in popular Presque Isle State Park, these 6.4-acre ponds provide additional angling opportunities for catchable trout near Erie. Beginning with the 2000 season, these ponds will receive preseason and inseason stockings of brook and brown trout.

Expansions to listed waters

Classification changes and/or stocking limit extensions have led to an increased stocking program on the following waters: Blue Spruce Lake, Indiana County; East Sandy Creek, Clarion County; Fishing Creek, West Branch, Potter County; Hinckston Run, Cambria County; Hokendauqua Creek, Northampton County; Lehigh Canal, Northampton County; Mammoth Dam, Westmoreland County; Pocono Creek, Monroe County; Ross Run, Forest County; Salt Lick Creek, Susquehanna County; Shaffers Run, Somerset County; Skinner Creek, McKean County; Two Mile Run, Upper, Venango County; Upper Woods Pond, Wayne County; Waynesboro Water Co. Reservoir, Adams County; and Whiteley Creek, Greene County.

Restorations

Stocking was canceled on the following waters in 1999 during a period of drawdown to allow for maintenance and repair work. We anticipate that conditions will be suitable to restore catchable trout stocking on both of these waters for the 2000 season: Delaware Canal, Bucks County; and Hidden Lake, Monroe County.

New Delayed-Harvest areas, extensions

Harvey Creek, Luzerne County. Initially, this section was stocked only during the spring as a new addition to the catchable trout program in 1999. Along with the spring plantings, a fall planting will be made during the 2000 season to provide more seasonal angling opportunities.

Little Pine Creek, Lycoming County. Beginning with the 2000 season, this popular Delayed-Harvest area will be extended upstream to the confluence with Otter Run. This 0.1-mile extension will provide better access and parking.

Schrader Creek, Bradford County. Beginning with the 2000 season, a 1.2-mile stream section will be added to the catchable trout program under the Delayed-Harvest, Artificial-Lures-Only program. The new section will extend from the Gamelands 36 boundary downstream to 100 yards below the confluence with Bull Run. Management under the Delayed-Harvest program will provide spring and fall stockings of brook and brown trout.

Early warning waters

Cloe Lake, Jefferson County. This earthen dam has been drained because of concerns pertaining to structural deficiencies and safety. Cloe Lake has subsequently been removed from the catchable trout program.

Mill Brook (Kellum Creek), Pike County. Recent inventory information has confirmed that this water supports an excellent Class A wild brook trout fishery. Stocking will be terminated in favor of wild trout management.

Stone Valley Lake, Huntingdon County. This lake has been drained to allow maintenance work to repair the spillway. This water has been removed from the catchable trout program for the 2000 season.

Loss of angling opportunities

The following waters will receive a reduction in their allocation for the 2000 season because of an increase in landowner posting. In many cases, posting and the loss of angling opportunity are a direct result of poor angler behavior: Mill Creek, Lycoming County; Muddy Creek, South Branch, York County; and Unami Creek, Bucks County.

"FISHING & BOATING MEMORIES LAST A LIFETIME" *Contest Winning Entries*

Memories of Seven Points

by Dale R. Hartman

I don't fish at Seven Points on Raystown Lake very often anymore. The water is still clean and fresh and the sun rises above the overhanging mountain just as brilliantly as ever. Boats pass by filled with an assortment of eager fishermen, happy children, and family dogs. From a nearby point, my favorite fishing place, I can see all sorts of vehicles glide past the newly enlarged parking lot. As they ascend the hill beyond the persimmon trees, it saddens me to think that they are returning to a world not of their own choosing, but that of necessity.

I once looked forward with great anticipation to leaving my cares behind and going out there to sit on a rough old stone, with a rod firmly braced on another, pointing out where the big ones swim. I really never minded that "Old Rubber Lips," a monster carp, continued to ignore my best offering. Time is of no consideration to a determined carp fisherman. All that I had to do was hang in there, and he would be mine, along with the welcome congratulations of fishermen friends.

I will always remember the first time that I fished at Seven Points–not because of a spectacular catch I made, but because of the two great people that I met there one evening.

The entire parking lot was deserted when I arrived. If there was anything that I especially didn't want at this particular time, it was the company of talkative fishermen to interrupt my solitude. So far, things looked good and conditions just couldn't be better. In no time at all I made my way to a likely spot and began to set up my equipment. After feeding the "Jolly Green Giant" from the can, I tossed a bit of enticement into the deep, baited up with a few tougher grains, and cast into the newly created picnic area.

I watched as a small red car came bounding down the road and zipped into the parking lot. And worse yet, another fisherman was approaching from around the bend. In passing, he said, "well, it looks like Granny and Beulah have arrived." Amid a flurry of activity, two women emerged from the little red car along with a mountain of fishing equipment. I watched in consternation as folding chairs, buckets, two rods and reels, tackle boxes, and a couple of landing nets were removed from what must have been a very little car, and quickly divided into two equal lots for transportation to the water's edge. My ardent hopes for solitude vanished as the heavily burdened entourage headed in my direction.

They reminded me of a nomadic two-camel caravan plodding determinedly toward long-sought water. In a matter of minutes they had selected a nearby spot and were ready to begin fishing. The younger lady, who I rightfully assumed was Beulah, deftly snatched a struggling minnow from a bucket, hooked it to her line, cast it into deep water, and sat down. Granny appeared to be a bit more selective in her bait choice. She spent some time staring intently into the bucket. Suddenly she made a grab and came up with a king-size minnow. When all was in order, she reared back to cast.

I was prepared to see a splash a short distance from the shore and a badly tangled reel with an interwoven line. At that very moment, there was a loud splash, and as I turned my eyes toward it, I saw a giant tail disappearing from sight. That tail could belong only to a sizeable striper. Granny saw it, too, and she sent that king-sized minnow sailing out there to land ever so gently in the center of that widening circle, where it caused barely a ripple. I knew in that instant that these ladies were head and shoulders above the average fisherman. They really did know what they were doing and I didn't mind them being there so much.

Things quieted for a while, but I could hear them talking in subdued voices, of canning, cooking, and quilting. Shortly I heard Granny say, "I think he is taking my minnow." Beulah said, "Well, get him out of there before he tangles my line." Needing no further encouragement, Granny set the hook. I sat there amazed as Granny fought that striper as only a professional could. Soon, a 12-pound striper lay on the bank. I walked up to admire her catch.

This chance encounter grew into a lasting friendship. I fished with Granny and her daughter many times. Their lively banter soon became a welcome interruption to my solitude.

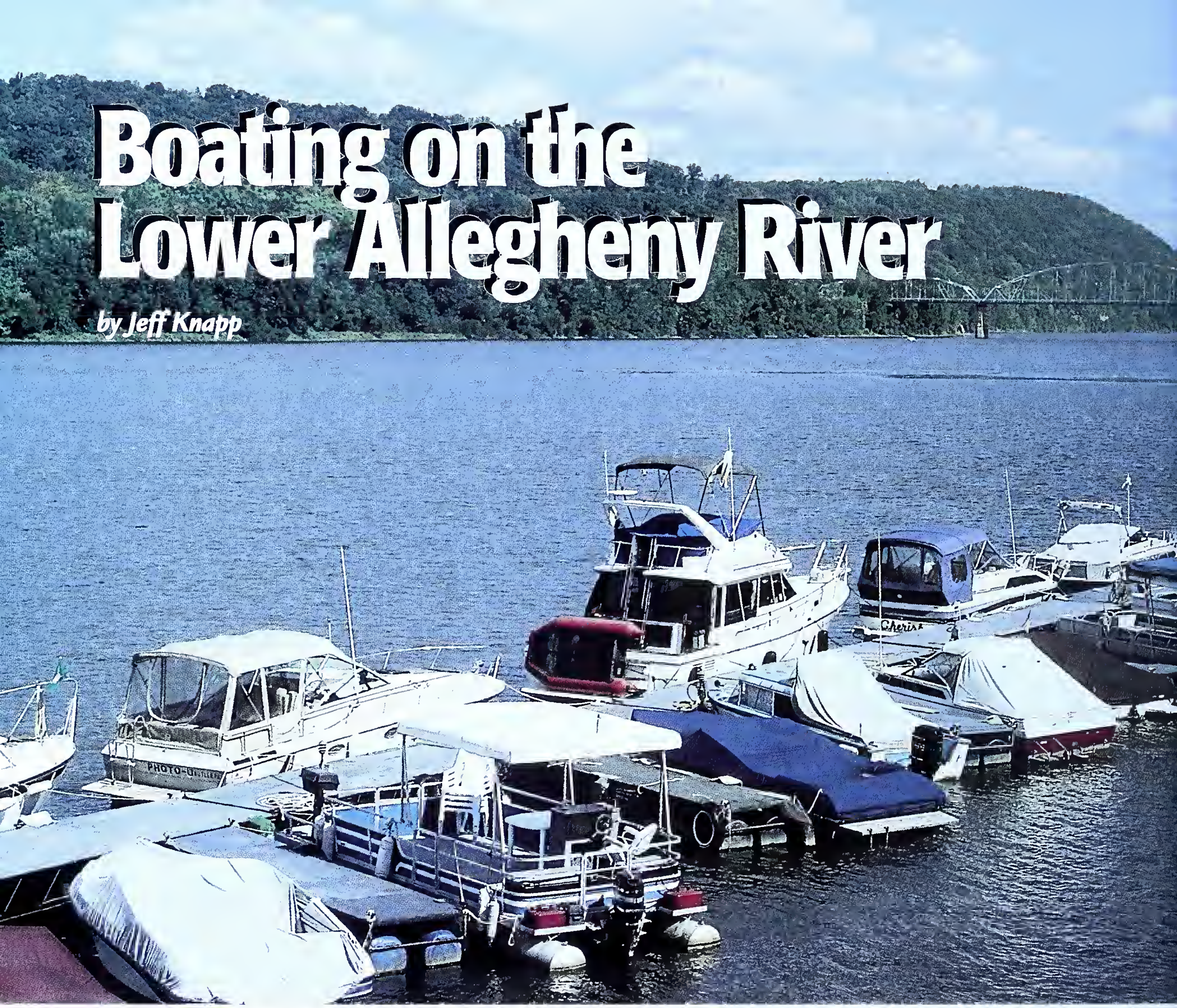
As I said in the beginning, I don't fish at Seven Points much anymore. I finally did catch Old Rubber Lips. He gave me quite a tussle, but the victory was mine. As the scale's needle settled on 19 pounds, I looked into his glaring eyes. I thought the prize was well within my grasp, and I could visualize my friends shaking my hand in congratulations. But do you know what? I just couldn't take him. Instead, I talked to him. Imagine me talking to a fish. I told him, "Rubber Lips, you old oversized sardine, you have given me solace in troubled times. You have nurtured a friendship that I might otherwise have never known. In return, I give you your freedom. Guard it well and don't ever dine on corn again." With that admiration, I sent him back in the water.

Granny left us last year and Beulah died soon thereafter, but their memory lives on. We somehow think that the Great Fisherman has them safe in his landing net. We are sure that they will be judged big enough to keep.

Memories really do last a lifetime.

Boating on the Lower Allegheny River

by Jeff Knapp



From the impressive backdrop of downtown Pittsburgh's skyline to the rustic environs of Brady's Bend, the lower Allegheny River provides some 72 miles of navigable waterway for Pennsylvania anglers and boaters. Along the way one can enjoy a variety of boating opportunities, not to mention other activities such as lunch at a riverside cafe or an afternoon on a sandy island.

photo-Jeff Knapp

From the impressive backdrop of downtown Pittsburgh's skyline to the rustic environs of Brady's Bend, the lower Allegheny River provides some 72 miles of navigable waterway for Pennsylvania anglers and boaters.

For those unfamiliar with boating on such rivers as the lower Allegheny, it shouldn't be viewed as an intimidating experience. Still, there are differences between this waterway and the state's major reservoirs. Navigational dams, rocky shallows, commercial barge traffic and many bridge piers are a few of the dangers associated with boating a navigable river.

With the hazards and the opportunities in mind, I recently spoke with the Fish & Boat Commission's Southwest Region Law Enforcement Manager Emil Svetahor. Having served for a long time as the Armstrong County Waterways Conservation Officer, Svetahor is quite familiar with the lower Allegheny and the boating opportunities it provides.

"The U.S. Army Corps of Engineers has eight lock-and-dam systems on the river," Svetahor said. "The pools, for the most part, are narrow and long. They go up to 10 miles in length."

The "pools" Svetahor mentioned are the river sections between dams. On the Allegheny, the lock-and-dam systems are named in numerical order, starting with Lock and Dam 2 in Pittsburgh (there is no Lock and Dam 1) and going up to Lock and Dam 9 near Rimer. The pool of each river section is located between dams. Each pool is named for the dam at its downriver point. For instance, Pool 2 of the Allegheny stretches from Lock and Dam 2 upriver to Lock and Dam 3 near Springdale. The primary purpose of the dams on the Allegheny is to elevate the river to a depth at which commercial barge traffic is possible. Recreational boating is a secondary benefit.

"Even though the river is narrow, the Corp of Engineers maintains a navigable channel. There is boating room. People with 40-foot houseboats run them on the Allegheny," Svetahor observed.

Many of Pennsylvania's more popular boating lakes lie in hilly settings, with little shallow water found any great distance from shore. The biggest concern in lake situations is often the presence of other boaters. But on the Allegheny, there can be many other threats. Svetahor suggested boaters new to the river take things easy at first, and purchase a guide that can make times afloat much safer.

"My recommendation is to purchase a set of navigation maps from the Army Corps of Engineers," said Svetahor. "New boaters should stay in the maintained channel until they learn the river and the spots where it's safe to deviate from the main channel. Getting these charts is always my first recommendation. The Corps maintains only the navigation channel. Once outside the channel, there's no guarantee of water depth."

A book of river charts of the Allegheny River can be purchased by contacting the U.S. Army Corps of Engineers Pittsburgh District Office at the William S. Moorhead Federal Building, 1000 Liberty Avenue, Pittsburgh, PA 15222, or by phoning 412-644-6872. Each chart in the book covers about 2.5 river miles. Charts show where the navigation channel is located, and indicate islands, larger shoals and rock bars. Bridges are marked, as are lock-and-dam structures. Details of bridges are shown opposite a given river chart, and the deepest water between bridge piers is also indicated.

Navigation buoys are set in the river to mark the edge of the channel where shallows lie nearby. These markers are color coded green and red. If a boater is headed downriver, green buoys will be on the right and red buoys will be on the left. Stay close to and to the left of the green buoys. Keep in mind that the opposite is true when heading upriver. In this instance, keep to the left of the red buoys and to the right of the green ones. Bridge piers have colored lights on them to mark the channel after dark.

Other navigation aids found along the Allegheny include daymarks. Some daymarks are lighted and give off a sequence of flashes that identifies individual daymarks. The location of daymarks and a code of the lighting characteristics can be found in the book of river charts. This knowledge is essential to help a boater get his bearings under tough conditions, such as in fog.

All of the navigational dams on the Allegheny are fixed-crest. This means that a solid cement dam spans the river from the lock chamber to the opposite bank. The tailrace below these dams is a restricted area, and is marked with "boats keep out" buoys during the recreational boating season. The line marking the restricted area lies for the most part perpendicular to the downriver end of the approach wall leading into the lock chamber. Similarly, a restricted area is found upriver of the lock chamber. A sign shows the "arrival point" above the lock chamber, and a line of buoys marks the channel leading into the lock chamber. Though these areas are well-marked, boaters need to be extra cautious when above a dam because the lock chamber approach can be difficult to see from the upriver position.

Some of the river hazards, objects like bridge piers and pilings, can be seen. Larger rocky shoals are marked with buoys, particularly where they come close to the navigable channel, but this doesn't mean every hazard is marked.

"The biggest problem on the Allegheny is the hazards that are unmarked," noted Svetahor. "You can get into trouble quickly. There might be a shoal at the mouth of any creek. It may extend over 100 feet from shore. That's something some people don't realize. Around some island areas, such as the ones near Rosston, there can be significant shoals that extend well out into the river."

In the Rosston area, the river widens considerably, and even though some buoys mark the danger, there's a lot of river outside the main channel through which folks try to navigate. Much of it is quite shallow, making for some good business for those who rebuild propellers and lower units.

"Other hazards include floating debris, especially after a period of high water," noted Svetahor. "Trees and logs can pop up anywhere."

Even though the Allegheny's function as an industrial corridor has diminished over the years, the river still carries plenty of commercial barge traffic. Typically a tugboat pushes a barge, or cluster of barges, whose normal cargo is sand or gravel. These craft take up a lot of room, and plow a significant wake in the water. They deserve a lot of distance and respect.

"It takes them a good quarter-mile to stop," Svetahor said. "You have to give them a wide berth and watch what they are doing. There is a large blindspot where the captain of the push boat can't see what's in front of him." Barges can also be especially tough to see after dark. Though they have navigational lights, there's a lot of drab-colored steel in between them, making it hard to distinguish the edges of the vessel, particularly on a foggy night.

This talk of boating hazards on the Allegheny is not meant to discourage a boater from taking to the river. On the contrary, it's to warn of potential threats so that the dangers stay only potential. In fact, from Svetahor's observation, boating activity has been on the rise.

"There has been an increase in the overall boating traffic on the Allegheny, from pleasure craft to personal watercraft," he said. "But there are many areas where a person can find tranquility. Water skiers and personal watercraft operators tend to stay in certain areas. There are so many miles of river on the Allegheny that if things don't suit you where you are, chance are they will around the next bend."

photo-Dan Martin

Locking Through

According to Commission Southwest Region Law Enforcement Manager Emil Svetahor, "There are people who are deathly afraid of locking through, and that's a shame because it's a simple procedure that opens up miles of river. Lockmasters will often walk a first-timer through the process."

The only special piece of hardware required is a 100-foot piece of rope, though most boaters carry fenders to protect the finish on their boats as they are tethered near the wall of the lock chamber.

"My recommendation is to go with someone in their boat who has locked through before," said Svetahor. "Once you've seen the procedure, you'll realize there's nothing to it."

The U.S. Army Corps of Engineers publishes a free pamphlet that explains the details of locking through. Contact the Corps at the address in the text on page 37.

Svetahor noted also that boaters need to be aware of hours of operation of locks, particularly on the upper pools of the river, which have more limited hours. Be sure to allow yourself plenty of time to get back to the pool from which you launched.-*JK*.

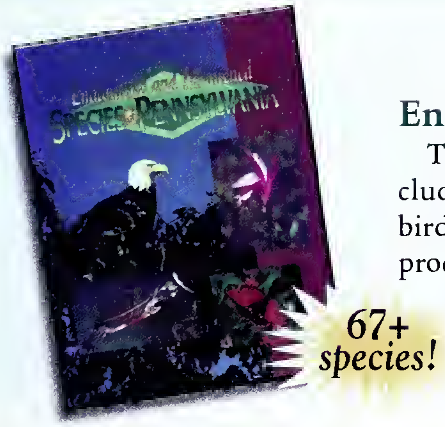
Products and Publications

Guide to Public Fishing Waters and Boating Access

This 96-page book, 5 ½ x 8 ½, lists by county the locations of Pennsylvania's public accesses with information on each access's services. Also listed are brief driving directions to each access. The book also lists Pennsylvania public fishing waters by county, including miles for flowing waters and acreage for impoundments and lakes, species available and nearest towns.

Pennsylvania Amphibians & Reptiles

This 161-page, 5 ½ x 8 ½, full-color book lists Pennsylvania's salamanders, frogs, toads, turtles, lizards and snakes. Each animal's account includes details on general characteristics, identification, range, habitat, reproduction and food. Range maps and full-color illustrations and photographs help anyone identify each species.



Endangered and Threatened Species of Pennsylvania

This book is 80 full-color pages and measures 8 ½ x 11. The book includes details on Pennsylvania's endangered and threatened invertebrates, birds and mammals, fish, reptiles, amphibians and plants. The book was produced as a cooperative effort among the Fish & Boat Commission, Game Commission, DCNR Bureau of Forestry, and the Wild Resource Conservation Fund.

PFBC Fishing & Boating Map

The full-color folded map measures 37 inches x 22 ¾ inches flat. With the official Transportation Map, the map marks the locations of more than 900 fishing and boating accesses, lake and impoundment special-regulation areas, flowing water special-regulation areas, fish culture stations, universally accessible areas, Commission offices and pumpout stations.

Products and Publications

Limited Editions!

Wall Charts

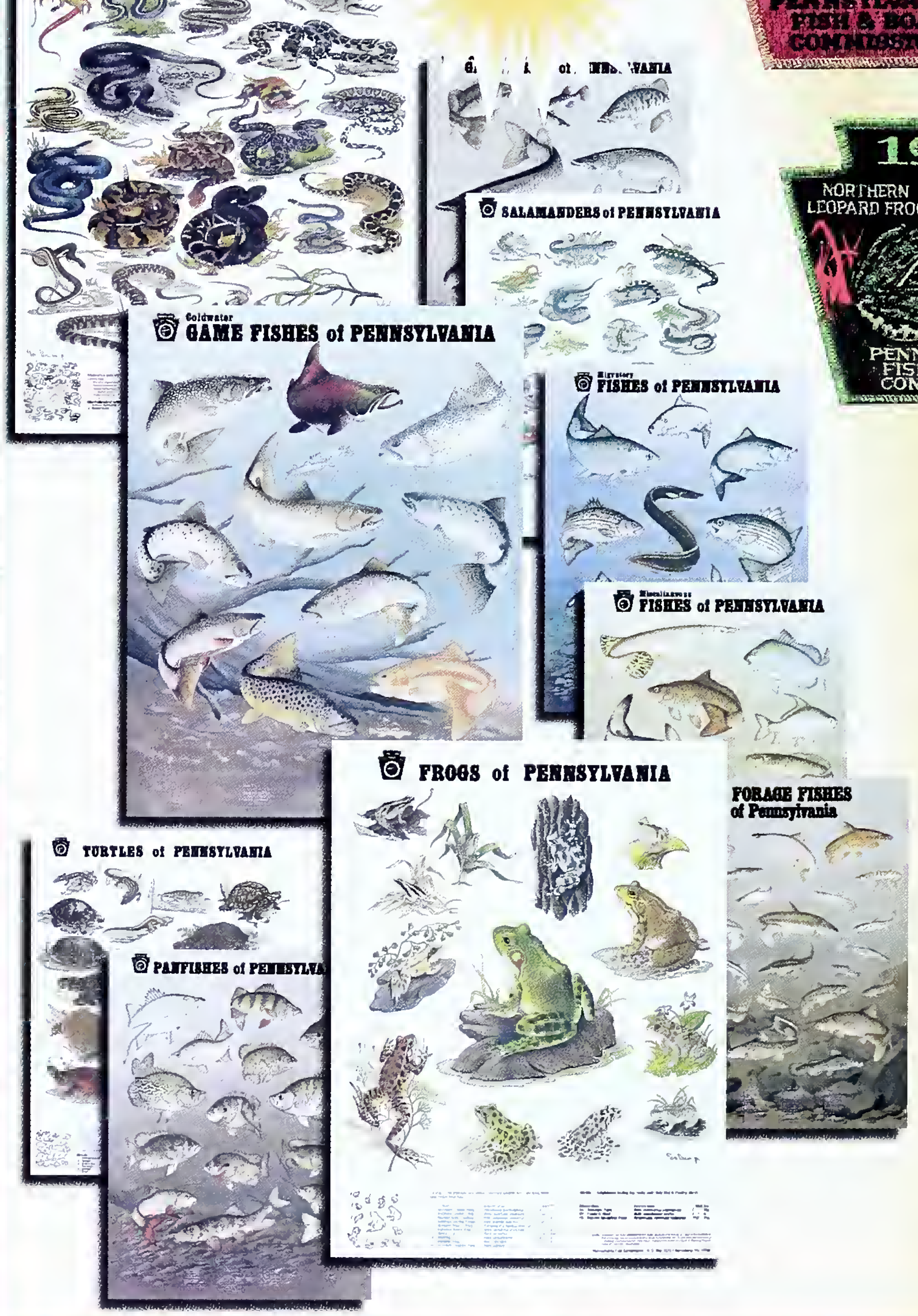
Each of the Commission's suite of 10 wall charts is printed in full color and measures 17 inches by 22 inches. Wall charts are printed on quality paper and are suitable for framing. Shipped rolled in tubes, not folded.

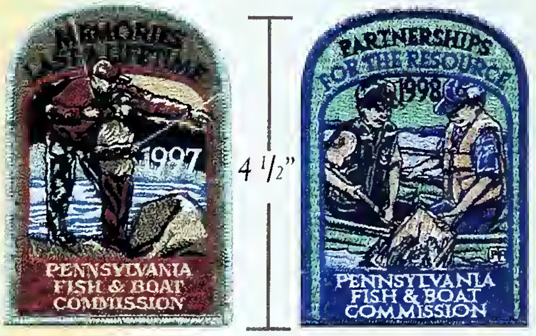
1997
Rainbow Darter
Pennsylvania Fish & Boat Commission
1998
Northern Copperhead
Pennsylvania Fish & Boat Commission
3 3/4"

1999
Northern Leopard Frog
Pennsylvania Fish & Boat Commission
2000
Midland Painted Turtle
Pennsylvania Fish & Boat Commission

NEW 2000 Species Patch!

BIG! 17" x 22"


SNAKES of Pennsylvania
SALAMANDERS of PENNSYLVANIA
Coldwater GAME FISHES of PENNSYLVANIA
Migratory FISHES of PENNSYLVANIA
Miscellaneous FISHES of PENNSYLVANIA
FROGS of PENNSYLVANIA
FORAGE FISHES of Pennsylvania
TURTLES of PENNSYLVANIA
PANFISHES of PENNSYLVA


Memories Last a Lifetime
1997
Pennsylvania Fish & Boat Commission
Partnerships for the Resource
1998
Pennsylvania Fish & Boat Commission
4 1/2"

Commemorative Patches

Commission commemorative patches are limited-edition items. Nongame species patches help raise awareness of Pennsylvania's nongame and endangered fish, reptiles and amphibians. With PLAY patches, supplies are limited, and they are offered only while supplies last.

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PLAY is an educational program to help you learn about fish, fishing, conservation, safety, and the waters of Pennsylvania. You'll receive a jacket patch, quarterly newsletter, "whistle for safety," special publications and other items to help you be a better angler.

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Pennsylvania ANGLER & BOATER

The Keystone State's Official Fishing and Boating Magazine

Each issue of *PA&B* is a big 64 pages. Inside you'll find important, firsthand conservation information. Look for special items like the annual Inseason Trout Stocking Schedule and the seasons, sizes and creel limits poster. You'll also get detailed fishing and boating articles, and news and stories on every aspect of the Commission.

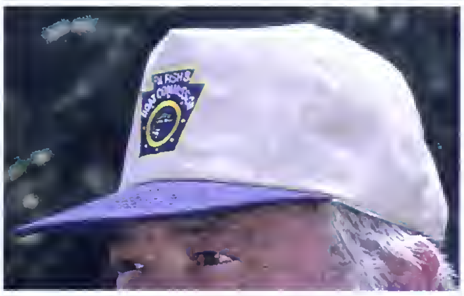
Subscribe for 3 years Get this FREE PATCH!

Subscribe, renew or extend your *Pennsylvania Angler & Boater* subscription for 3 years, and we'll send you this "CONSERVE 2000" patch for FREE (a $5 value). Patch is available only with 3-year subscription. Offer subject to expire without notice or when patch supply is depleted.

7 thread colors 4 ½" wide by 2¾" high

PFBC Ball Cap

A Commission ball cap is available in tan and blue. The pattern stands out with the Commission "keystone" logo. The cap is one-size-fits-all, and is made in U.S.A.



tan and blue

PRINTED ON RECYCLED PAPER with soy-based inks

Waterway	Week of:
Butler County continued	
Slippery Rock Ck	4/24, 5/15, 10/2
Slippery Rock Ck, N Br	5/1
Thorn Ck	4/24, 5/8

Cambria County

Beaverdam Rn	5/1
Bens Ck	4/17, 5/8
Blacklick Ck, N Br	4/17, 4/24
Chest Ck	4/17, 5/15, 10/2
Conemaugh R, Ltl, N Br	4/24, 5/8
Duman Dm	4/17*, 5/1*, 5/15, 12/11, 2/19/01
Elton Sportsmens Dm	5/8, 5/15
Hinckston Rn	5/8, 5/15
Howells Rn	4/17, 4/24
Killbuck Rn	4/24, 5/1
Killbuck Rn, Ltl	5/1
Laurel Lick Rn	4/24, 5/8
Laurel Rn	5/1, 5/8, 5/15
Lake Rowena	4/17*, 5/1*, 5/8, 10/2, 12/11, 2/19/01
Noels Ck	5/8
Paint Ck, Ltl	5/8, 5/15
Slate Lick Rn	5/1
Stewart Rn	4/17, 4/24

Cameron County

Brooks Rn	4/17, 5/8, 5/22
George B. Stevenson Rs	5/1*, 5/8*, 5/22*, 10/2, 12/11, 1/29/01
Hicks Rn, E Br	5/1, 5/15, 5/22
Hicks Rn, W Br	5/15
Jerry Rn, Up	5/22
Mix Rn	5/1, 5/15, 5/22
North Ck	4/24
Sinnemahoning Ck, Driftwood Br	5/1, 5/8, 5/15, 10/2
Sinnemahoning Ck, First Fk	4/17, 5/8
Sinnemahoning-Portage Ck	5/29
West Ck	4/24, 5/22
Wykoff Rn	5/22

Carbon County

Aquashicola Ck	4/24, 5/1, 5/8
Bear Ck, Bg	4/17
Buckwha Ck	5/1, 5/15
Drakes Ck	4/17
Fourth Rn	4/17
Hunter Ck	4/17
Lehigh Canal	4/17, 5/1, 10/2
Lehigh R	5/1, 5/22
Lizard Ck	4/24, 5/15
Mahoning Ck	4/24, 5/8, 5/15
Mauch Chunk Ck	4/17, 5/1
Mud Rn	4/17, 10/2
Pohopoco Ck	4/17, 5/1
Sand Spring Rn	4/24, 5/1, 5/8
Stony Ck	5/1

Centre County

Bald Eagle Ck	5/1, 5/15, 5/22
Beech Ck, S Fk	4/24
Black Bear Rn	4/24

Waterway	Week of:
Centre County continued	
Black Moshannon Ck	4/24, 5/1, 5/22, 5/29, 10/2
Boy Scout Dm	5/8
Cold Stream	5/15
Fishing Ck, Ltl	5/15
Marsh Ck	4/24
Mountain Br	5/15
Penns Ck	4/17
Pine Ck	5/1, 5/8, 5/22, 5/29
Poe Ck	4/17, 5/8, 10/2
Poe Lk	4/17*, 5/8*, 5/22, 5/29, 10/2, 11/6
Sinking Ck	4/17
Sixmile Rn	4/24, 5/1, 5/22, 5/29
White Deer Ck	5/1

Chester County

Beaver Ck	4/17, 5/1
Brandywine Ck, E Br	4/17, 5/15, 10/2
Brandywine Ck, W Br	4/17, 5/1, 5/15
Buck Rn	4/24, 5/1
Elk Ck, Bg	5/1
Elk Ck, E Br	5/1
French Ck	4/24, 5/8, 10/2
Octoraro Ck, E Br	4/24, 5/15
Pickering Ck	4/24, 5/15, 10/2
Pocopson Ck	4/24, 5/1
Valley Ck, W	4/17, 4/24, 5/15, 10/2
White Clay Ck	4/24, 5/8, 5/15
White Clay Ck, E Br	4/24, 5/1, 5/8, 5/15
White Clay Ck, Md Br	5/1, 5/8, 5/15, 10/2

Clarion County

Beaver Ck	4/17
Canoe Ck	4/24
Cathers Rn	5/1
East Sandy Ck	4/24
Leatherwood Ck	5/1
Mill Ck	4/17, 5/1, 5/22
Piney Ck	5/22
Toms Rn	4/24, 5/1, 5/8, 5/22, 6/5, 10/2
Turkey Rn	4/17

Clearfield County

Anderson Ck	4/24, 5/22
Beaver Rn	4/17
Beech Rn	5/22
Chest Ck	4/17, 5/15
Clearfield Ck, Ltl	4/17, 5/1, 5/15, 10/16
Curry Rn	5/1
Cush Ck	5/1
Gifford Rn	5/1
Goss Run Dm	4/17*, 5/8*
Hockenberry Rn	5/8
Jack Dent Br	4/17, 5/1, 5/15
Janesville Dm	5/8*, 10/16, 11/6
LaBorde Br	5/22
Laurel Rn	5/15
Medix Rn	4/17, 5/1, 5/15, 6/5
Moose Ck	4/17, 5/15, 5/22
Muddy Rn, Ltl	5/8
North Witmer Rn	5/8
Parker Lk	4/17*, 5/22*, 6/5, 10/16, 11/6

Waterway	Week of:
Clearfield County continued	
Sinnemahoning Ck, Bennett Br	4/24
South Witmer Rn	5/8
Susquehanna R, W Br	4/24
Tannery Dm	4/17*, 5/22*
Wilson Rn	5/8

Clinton County

Baker Rn	5/1
Cooks Rn	4/17
Fishing Ck	5/1, 5/15, 10/2
Fishing Ck, Ltl	5/15
Hyner Rn	4/17
Hyner Rn, Lf Br	4/17
Hyner Rn, Rt Br	4/17, 4/24, 5/15
Kettle Ck	4/17, 4/24, 5/8, 5/15
Kettle Ck Lk	4/17*, 4/24*, 5/15*, 10/2, 12/11, 2/5/01
Long Rn	5/8
Rauchtown Ck	5/8
Young Womans Ck, L Br	4/24, 5/15, 5/22, 5/29

Columbia County

Beaver Rn	4/17
Briar Creek Lk	4/17*, 4/24*, 5/1*, 10/2, 10/30, 1/29/01
Fishing Ck	5/1, 5/15, 5/22
Fishing Ck, Ltl	5/8
Roaring Ck	4/24, 5/8
Scotch Rn	4/17
West Ck	5/8

Crawford County

Caldwell Ck	5/1, 5/15, 10/9
Conneaut Ck	4/24
Five Mile Ck	5/15
McLaughlin Ck	5/22
Muddy Ck	5/15
Oil Ck	5/1, 5/8
Oil Ck, E Br	5/15
Pine Ck	5/15, 5/22
Sugar Ck	5/15
Sugar Ck, Ltl	5/1
Thompson Ck	5/22
Woodcock Ck	4/17, 10/2

Cumberland County

Big Spring Ck	5/8, 5/15, 10/2
Childrens Lk	5/8*, 5/15*
Doubling Gap Lk	4/17*, 5/1*
Fuller Lk	5/15*
Green Spring Ck	5/15, 10/2
Laurel Lk	4/17*, 5/1*, 5/8*, 5/15*, 10/2, 12/11, 2/5/01
Middle Spring Ck	5/8, 5/15
Mountain Ck	5/1, 5/8, 5/15, 10/2
Old Town Rn	4/17
Opossum Ck Lk	4/17*, 5/1*, 5/8*, 10/2, 12/11, 2/5/01
Yellow Breeches Ck	4/17, 5/1, 5/8, 5/15

Dauphin County

Armstrong Ck	4/24, 5/8
Clarks Ck	5/1, 5/8, 5/15, 10/9
Manada Ck	5/1, 5/22, 10/2

**** = Saturday stocking. See separate listing.***

Dauphin County continued

Waterway	*Week of:*
Middletown Rs	4/17, 5/15
Pine Ck	5/22
Powell Ck	4/24, 5/15
Powell Ck, S Fk	5/8
Rattling Ck	4/24, 5/8, 5/22
Rattling Ck, E Br	4/24
Stony Ck	5/1, 5/15, 5/22
Wiconisco Ck	4/24, 5/8

Delaware County

Chester Ck	5/8, 5/15
Chester Ck, E Br	4/17, 5/8, 5/15, 10/9
Chester Ck, W Br	5/8, 5/15
Darby Ck	4/17, 5/1, 5/15, 10/9
Darby Ck, Ltl	4/17
Ithan Ck	4/17, 5/1
Ridley Ck	4/17, 5/1, 5/15, 10/9

Elk County

Bear Ck	5/15
Byrnes Rn	4/17
Clarion R, E Br	5/8, 5/15, 5/29, 10/2
Clarion R, W Br	5/1, 5/8, 5/15, 10/2
Crooked Ck	4/17, 5/1, 5/15, 5/29
Hicks Rn	5/1, 5/15, 5/22
Hicks Rn, E Br	5/1, 5/15, 5/22
Hicks Rn, W Br	5/15
Hoffman Rn	5/1
Laurel Rn Rs	4/24*, 5/1*, 10/2, 12/4
Maxwell Rn	5/15
Mead Rn	5/1
Medix Rn	4/17, 5/1, 5/15, 6/5
Mill Ck, Bg	4/17, 4/24, 5/8, 5/22, 5/29, 10/2
Millstone Ck	4/17, 4/24, 5/8, 5/22
Millstone Ck, E Br	4/17, 4/24, 5/22, 5/29
Mix Rn	5/1, 5/15, 5/22
Powers Rn	4/17, 5/1, 5/15, 5/29
Ridgway Rs	4/24*, 5/1*, 10/2, 12/4
Rocky Rn	5/1
Spring Ck	4/24, 5/8
Spring Ck, E Br	5/8
Straight Ck	5/29
Toby Ck, Ltl	5/1, 5/15
Twin Lks	4/24*, 5/1*, 5/15
West Ck	4/24, 5/22
Wilson Rn	5/29
Wolf Rn	4/24

Erie County

Cascade Ck	4/17, 4/24
Conneautee Ck	4/24, 5/8
Crooked Ck	5/1
Elk Ck	4/17, 4/24
French Ck, S Br	4/24, 5/1
Lake Pleasant	5/1*, 5/22*, 12/4, 2/12/01
Twentymile Ck	4/17, 5/1
Upper Gravel Pit	4/17*, 2/19/01
Waterworks Ponds	4/17, 4/24

Fayette County

Back Ck	5/15
Dunbar Ck	4/17, 5/15, 10/9
Dunlap Ck	4/24, 5/29

Fayette County continued

Waterway	*Week of:*
Dunlap Ck Lk	4/17*, 4/24, 5/8*, 5/22, 5/29, 10/9, 12/18, 2/5/01
Georges Ck	4/24, 5/22
Indian Ck	4/17
Meadow Rn	5/8, 5/15, 10/9
Mill Rn	4/24, 5/15
Sandy Ck, Bg	4/24, 5/15
Virgin Rn Dm	4/24*, 5/8*, 5/15, 10/9, 12/18, 2/5/01
Youghiogheny R	4/17, 5/1, 5/8, 5/22, 6/5, 6/26, 7/31, 8/28, 10/9, 2/5/01

Forest County

Beaver Rn	5/15
Bluejay Ck	4/24, 5/8, 5/22, 6/5
Coon Ck, Bg	5/1, 5/8
Coon Ck, Ltl	4/24
Hickory Ck, East	5/1, 5/15, 10/2
Hickory Ck, West	5/1
Hickory Rn, Ltl	5/15
Maple Ck	5/8
Millstone Ck, W Br	5/8
Queen Ck	5/1
Ross Rn	4/24, 5/8, 5/22
Salmon Ck	4/17, 4/24, 5/8, 10/2
Spring Ck	4/24, 5/8
The Branch	4/17
Tionesta Ck	4/17, 4/24, 5/1, 5/8
Tionesta Ck, S Br	5/1, 5/22
Toms Rn	4/24, 5/1, 5/8, 5/22, 6/5, 10/2
Wards Ranch Pd	4/24, 5/1, 10/30

Franklin County

Antietam Ck, E Br	4/17, 5/8, 5/15, 5/22, 10/2
Antietam Ck, W Br	4/17, 5/8
Buck Rn	4/17
Carbaugh Rn	5/15
Conococheague Ck	4/17, 4/24, 5/1, 5/8, 10/2
Conococheague Ck, W Br	4/17, 4/24
Conodoguinet Ck	5/22
Cove Ck, Ltl	5/22
Dennis Ck	5/15, 5/22
Falling Spring Br	5/15, 5/22, 10/2
Letterkenny Rs	5/1*, 10/2, 12/11
Muddy Rn	5/15, 5/22
Rowe Rn	5/15, 5/22

Fulton County

Aughwick Ck, Ltl	5/22
Aughwick Ck, Ltl, N Br	5/1
Aughwick Ck, Ltl, S Br	4/24, 5/1, 5/22
Brush Ck	5/1
Cove Ck	5/1, 5/15, 10/2
Cowans Gap Lk	4/24, 5/1, 5/8*, 5/15*, 10/2, 12/11, 2/5/01
Laurel Fk	5/1
Licking Ck	5/1
Oregon Ck	4/24
Sideling Hill Ck	4/24
Spring Rn	5/15
Tonoloway Ck, Ltl	5/15
Wooden Bridge Ck	5/15

Waterway	*Week of:*

Greene County

Browns Ck	4/17
Duke Lk	4/24*, 5/8*, 10/2, 12/11, 2/19/01
Wheeling Ck, Dunkard Fk	5/1
Wheeling Ck, Dunkard Fk, N Fk	4/17, 5/1
Wheeling Ck, Dunkard Fk, S Fk	4/17
Whiteley Ck	4/17

Huntingdon County

Aughwick Ck, Ltl, N Br	5/1
Blacklog Ck	5/1, 5/22
Globe Rn	5/1
Greenwood Lk	4/24*, 5/8*
Hares Valley Ck	5/8
Laurel Rn	4/17, 5/1, 5/22, 10/9
Licking Ck, W	4/17
North Spring Br	5/8
Saddler Ck	5/22
Shade Ck	5/8
Shaver Ck	5/1
Standing Stone Ck	4/17, 4/24, 5/8, 5/15
Three Springs Ck	5/8
Trough Ck, Great	4/17, 5/1, 5/22, 10/9
Tuscarora Ck	4/17, 5/22
Whipple Lk	4/24*, 5/8*, 12/4

Indiana County

Blacklegs Ck	5/1
Blue Spruce Lk	4/17*, 5/8*, 5/15, 12/11
Brush Ck	5/1
Cush Ck	5/1
Cush-Cushion Ck	5/1
Laurel Rn	5/1
Mahoning Ck, Ltl	4/17, 5/1, 10/2
Mudlick Rn	5/1
Toms Rn	4/17, 5/8
Two Lick Ck, S Br	5/1
Yellow Ck	4/17, 5/8
Yellow Ck, Ltl	5/8

Jefferson County

Big Rn	5/15
Canoe Ck	4/17
Cathers Rn	5/1
Clear Ck	4/24, 5/15, 6/19, 10/2
Clear Rn	4/24
Five Mile Rn	4/17
Horm Rn	5/1
Mahoning Ck, E Br	4/17
Mill Ck	5/1
Mill Ck, Ltl	5/8
Pekin Rn	5/8
Rattlesnake Ck	5/15
Rattlesnake Rn	5/15
Red Bank Ck	4/17, 4/24, 5/15
Red Bank Ck, N Fk	4/24, 5/8, 10/2
Sandy Ck, Ltl	5/1, 5/15
Sandy Lick Ck	4/24, 5/8
Toby Ck, Ltl	5/1, 5/15
Walburn Rn	5/1
Wolf Rn	5/1

** = Saturday stocking. See separate listing.*

Juniata County

Waterway	*Week of:*
Big Rn	5/1
Blacklog Ck	5/1, 5/22
Cocolamus Ck	5/1
Delaware Ck	5/1
Horning Rn	5/1
Horse Valley Rn	5/8
Laurel Rn	5/8
Licking Ck, E	4/24, 5/8, 5/15, 10/9
Lost Ck	5/1
Tuscarora Ck	4/17, 5/22

Lackawanna County

Waterway	*Week of:*
Aylesworth Ck Lk	4/17*, 5/1*
Gardners Ck	5/15
Lackawanna Lk	4/17, 5/15, 10/2, 1/29/01
Lackawanna R	4/17, 4/24
Lehigh R	4/24, 5/1, 5/8, 5/22, 10/2
Merli-Sarnoski Lk	4/17*, 5/1*, 5/8*, 5/15*, 10/2, 10/30, 1/29/01
Roaring Bk	4/17, 4/24, 5/1, 10/2
Spring Bk	5/1
Tunkhannock Ck, S Br	4/17, 5/1
Wallenpaupack Ck, W Br	5/1

Lancaster County

Waterway	*Week of:*
Beaver Ck, Bg	4/24, 5/15
Beaver Ck, Ltl	4/24, 5/15
Bowery Rn	5/1
Chickies Ck, Ltl	4/17, 4/24
Climbers Rn	5/15
Cocalico Ck, Ltl	4/24, 5/15
Conestoga Ck, Ltl	5/1, 5/8
Conestoga Ck, Ltl, W Br	5/1, 5/8
Conowingo Ck	5/1, 5/15
Conoy Ck	4/17, 4/24
Donegal Ck	4/17, 4/24, 10/2
Eshelman Rn	4/17, 5/1
Fishing Ck	5/1
Hammer Ck	5/1, 5/8
Indian Rn	5/8
Londonland Rn	4/17
Meetinghouse Ck	4/17
Middle Ck	4/24, 5/8
Muddy Ck, Ltl	4/24
Muddy Rn	5/8
Muddy Run Rec Lk	4/24*, 10/2, 12/4, 2/12/01
Octoraro Ck, E Br	4/24, 5/15
Octoraro Ck, W Br	4/24, 5/8, 10/2
Pequea Ck	4/24, 5/15
Rock Rn	4/24, 5/15
Shearers Ck	5/1, 5/8
Trout Rn	5/15
Tucquan Ck	5/1

Lawrence County

Waterway	*Week of:*
Beaver R, Ltl, N Fk	4/17
Bessemer Lk	4/17*, 4/24, 5/8*, 10/2, 1/1/01
Big Rn	5/1
Cascade Quarry	4/17*, 10/2, 12/11
Deer Ck	5/1
Hickory Rn	4/17
Honey Ck	4/17
Neshannock Ck	4/17, 5/1, 5/8, 5/15, 10/2

Lawrence County continued

Waterway	*Week of:*
Slippery Rock Ck	4/24, 5/15, 10/2
Taylor Rn	4/24

Lebanon County

Waterway	*Week of:*
Bachman Rn	4/17, 4/24
Conewago Ck	4/17, 4/24
Hammer Ck	5/1, 5/8
Lions Lk	4/17
Marquette Lk	4/17
Mill Ck	5/8, 5/15
Quittapahilla Ck	4/24, 5/1, 5/8, 10/2
Rexmont Dm, Lw	4/17, 4/24
Rexmont Dm, Up	4/17, 4/24, 10/2
Snitz Ck	4/24, 5/8
Stony Ck	5/1, 5/15, 5/22
Stovers Dm	10/2, 12/11, 1/29/01
Trout Rn	5/8
Tulpehocken Ck	4/17, 5/22

Lehigh County

Waterway	*Week of:*
Cedar Ck	4/24, 5/8
Coplay Ck	4/24, 5/8
Jordan Ck	4/17, 5/1, 5/15
Kistler Ck	5/1
Leaser Lk	4/17*, 4/24*, 10/2, 12/11, 1/29/01
Lehigh Ck, Ltl	4/24, 5/8, 5/15, 5/22, 10/2
Ontelaunee Ck	5/1
Swabia Ck	5/1, 5/15
Switzer Ck	4/17
Trout Ck, Bg	5/1, 5/15

Luzerne County

Waterway	*Week of:*
F E Walter Rs	5/1*, 5/15*
Francis Slocum Lk	4/17, 4/24*
Harvey Ck	4/17, 4/24, 5/1, 5/15, 10/2
Harveys Lk	5/22, 10/2
Irena Lk	4/17*, 4/24*, 5/15*, 10/2, 1/29/01
Lake Francis	4/17, 4/24, 5/22
Lake Took-A-While	4/17, 4/24, 10/2, 1/29/01
Lehigh R	5/1, 5/22
Lily Lk	4/24*, 5/8*, 10/2, 1/29/01
Moon Lk	4/17*, 4/24*, 5/1*, 5/8*, 10/2, 1/29/01
Nescopeck Ck	5/1, 5/8, 10/2
Pine Ck	5/15
Sylvan Lk	10/30
Wapwallopen Ck	4/17, 4/24
Wrights Ck	5/1

Lycoming County

Waterway	*Week of:*
Bear Ck, Ltl	4/17, 5/1, 5/8
Black Hole Ck	5/1
Blockhouse Ck	4/17
Hoagland Rn	4/17
Larrys Ck	4/17
Little Pine Lk	4/24*, 5/1*, 5/8, 10/2, 12/4, 1/29/01
Loyalsock Ck	5/1, 5/8, 5/15, 5/22, 10/2
Lycoming Ck	4/24, 5/8, 5/15
Mill Ck	5/8
Muncy Ck	4/17, 4/24, 5/1, 5/8, 10/2
Muncy Ck, Ltl	4/17
Pine Bottom Rn, Up	4/17

Lycoming County continued

Waterway	*Week of:*
Pine Ck	4/17, 4/24, 5/8, 5/15
Pine Ck, Ltl	4/17, 4/24, 5/1, 10/2
Pleasant Stream	4/24
Roaring Bk	5/22
Rock Rn	4/17, 4/24, 5/15, 5/22
Spring Ck	5/1
Trout Rn	4/24
White Deer Hole Ck	5/1

McKean County

Waterway	*Week of:*
Allegheny R	5/22
Bell Rn	4/24
Bradford Rs #3	4/24*, 5/8*, 10/2, 12/18, 2/26/01
Brewer Rn	5/8
Chappel Fk	4/17, 5/1, 5/15, 5/29
Clarion R, W Br	5/1, 5/15
Colegrove Bk	5/8
Combs Ck	4/24
Hamlin Lk	4/24*, 5/8*, 5/15, 10/2
Havens Rn	5/22
Kinzua Ck	4/24, 5/8, 5/22, 6/5, 10/2
Kinzua Ck, S Br	4/24
Marvin Ck	4/17, 5/1, 5/15, 5/22, 10/2
Meade Rn	4/17, 5/1, 5/15, 5/29
Potato Ck	4/17, 5/8
Potato Ck, W Br	5/8
Red Mill Bk	5/22
Sevenmile Rn	5/1
Skinner Ck	4/24
Sugar Rn	5/15
Tionesta Ck, E Br	5/8
Tunungwant Ck, W Br	5/15, 10/2
Twomile Rn	5/8
Willow Ck	4/17, 5/1, 5/15, 5/29

Mercer County

Waterway	*Week of:*
Cool Spring Ck	5/8, 5/15, 10/16
Mill Ck	4/17
Neshannock Ck	4/17, 5/1, 5/8, 5/15
Neshannock Ck, Ltl, W Br	4/17
North Deer Ck	5/8
Pine Rn	5/22
Sandy Ck	5/1, 5/8
Shenango R	4/17, 5/8, 10/2, 2/5/01
Shenango R, Ltl	5/8, 5/22
Wolf Ck	5/8, 5/22

Mifflin County

Waterway	*Week of:*
Havice Ck	4/17
Honey Ck	5/1
Kishacoquillas Ck	4/17, 5/15, 5/22
Licking Ck, E	4/24, 5/8, 5/15, 10/9
Licking Ck, W	4/17
Lingle Ck	4/17
Musser Rn	5/15
Strodes Rn	5/15
Treaster Rn	4/17

Monroe County

Waterway	*Week of:*
Appenzell Ck	4/17
Brodhead Ck	4/24, 5/8, 5/22, 10/2
Buckwha Ck	5/1
Bushkill Ck	4/24, 5/1, 5/8, 5/22, 10/2
Dotters Ck	5/15

** = Saturday stocking. See separate listing.*

Waterway	*Week of:*
Monroe County continued	
Hidden Lk	4/24, 5/8, 1/29/01
Lake Ck	5/15
Lehigh R	4/24, 5/1, 5/8, 5/22, 10/2
McMichaels Ck	5/8, 5/22
Pocono Ck	4/17, 5/15
Princess Rn	5/15
Snow Hill Dm	4/17*, 4/24*
Tobyhanna Ck	4/17, 5/1, 5/22, 10/2
Tobyhanna Lk	4/24*, 10/30
Montgomery County	
Deep Creek Dm	4/17, 4/24
Loch Alsh Rs	4/17, 4/24
Mill Ck	4/17, 4/24
Pennypack Ck	4/24, 5/1, 5/8
Perkiomen Ck	4/17, 5/8
Perkiomen Ck, E Br	4/24, 5/8
Skippack Ck	4/17, 5/1
Stony Ck	4/17, 4/24
Unami Ck	4/17, 5/1
Unnamed Trib, Stony Ck	4/17, 4/24
Wissahickon Ck	4/17, 5/1, 5/15
Montour County	
Kase Br	4/24
Mahoning Ck	4/17, 4/24
Northampton County	
Bushkill Ck	4/24, 5/8, 5/15, 5/22, 10/2
Bushkill Ck, Ltl	5/8, 5/22
Hokendauqua Ck	4/17, 5/1
Indian Ck	4/17, 5/1
Jacoby Ck	5/8
Lehigh Canal	4/17, 5/1
Martins Ck	4/24, 5/8
Minsi Lk	5/1*, 11/13, 2/12/01
Monocacy Ck	4/24, 5/22
Saucon Ck	4/17, 5/1
Waltz Ck	4/24, 5/8
Northumberland County	
Mahantango Ck	5/1
Roaring Ck, S Br	4/17
Schwaben Ck	5/1
Shamokin Ck, Ltl	4/24, 5/1, 5/8
Zerbe Twp Rod & Gun Club Pd	5/8
Perry County	
Allen Holman Lk	4/17, 4/24*, 10/2, 12/4
Bixler Rn	5/22
Buffalo Ck	5/1, 5/22
Buffalo Ck, Ltl	4/17, 5/1, 5/22
Bull Rn	5/8
Fishing Ck	5/1
Fowler Hollow Rn	5/8, 5/22
Horse Valley Rn	5/8
Juniata Ck, Ltl	5/15
Laurel Rn	5/8
McCabe Rn	5/22
Montour Ck	5/22
Panther Ck	5/15
Raccoon Ck	5/15
Sherman Ck	4/24, 5/15
Shultz Ck	5/8

Waterway	*Week of:*
Philadelphia County	
Pennypack Ck	4/24, 5/1, 5/8
Wissahickon Ck	4/17, 5/1, 5/15, 10/9
Pike County	
Bushkill Ck	4/24, 5/1, 5/22, 10/2
Bushkill Ck, Ltl	4/24, 5/1, 5/8, 5/22
Decker Bk	4/17, 4/24, 5/1
Dingmans Ck	5/8, 10/2
Fairview Lk	4/24, 10/30
Lackawaxen R	4/17, 4/24, 10/2
Lake Loch Lomond	4/17, 5/1
Lake Minisink	4/17, 5/1
Little Mud Pond	4/17, 5/1
Masthope Ck	4/17, 4/24
Promised Land Lk, Lw	4/17*, 10/30
Saw Ck	4/24
Shohola Ck	5/8
Potter County	
Allegheny R	5/1, 5/8, 5/15, 5/22, 10/2
Bailey Rn	5/1
Cowanesque R	4/17
Cowley Rn, E Br	4/17, 5/8, 5/22
Cowley Rn, W Br	4/17, 5/8
Elevenmile Ck	5/1
Fishing Ck	4/24
Fishing Ck, E Br	4/24
Fishing Ck, W Br	4/24
Freeman Rn	4/17, 5/8
Genesee R	5/15
Genesee R, Md Br	5/15
Genesee R, W Br	5/15
Kettle Ck	4/24, 5/15, 5/22, 5/29, 10/2
Kettle Ck, Ltl	5/1, 5/15, 5/22, 5/29
Lyman Lk	4/24*, 5/8*, 5/15, 6/26, 10/2, 11/13, 2/26/01
Lyman Rn	5/15
Oswayo Ck	5/1
Oswayo Ck, S Br	5/1
Pine Ck	4/17, 5/15
Pine Ck, W Br	5/1
Sinnemahoning Ck, E Fk	4/17, 5/8, 5/22
Sinnemahoning Ck, First Fk	4/17, 5/1, 5/8, 10/2
South Woods Br	4/17, 5/22
Schuylkill County	
Bear Ck	4/24, 10/2
Beaver Ck	4/17
Catawissa Ck, Ltl	5/8
Cold Rn	4/17
Deep Ck	4/17
Lizard Ck	4/24
Locust Ck	4/17, 5/1
Locust Lk	4/17, 5/1, 5/8, 5/15, 12/11, 1/29/01
Mahanoy Ck, Ltl	5/1, 5/8
Mahantango Ck	5/1
Mahoning Ck	5/8
Pine Ck - Trib. to Schuylkill R	4/17, 5/22
Pine Ck-02 - Trib. to Mahantango Ck	5/1, 5/8, 5/15
Pine Ck - Trib. to Schuylkill R, Ltl	4/17, 5/8

Waterway	*Week of:*
Schuylkill County continued	
Pumping Station Dm	5/1, 5/8
Rabbit Run Rs	5/22
Red Ck	4/24
Schuylkill R, Ltl	4/17, 10/2
Swatara Ck, Lw, Ltl	5/8
Swatara Ck, Up, Ltl	4/17
Tuscarora Lk	10/2, 12/11
Whippoorwill Dm	5/1, 5/8, 5/15
Snyder County	
Kern Rn	5/15
Mahantango Ck, N Br	5/1
Mahantango Ck, W Br	5/1
Middle Ck	4/17
Middle Ck, N Br	5/15
Middle Ck, S Br	5/15
Swift Rn	4/17, 5/15, 5/22
Somerset County	
Beaverdam Ck	5/15
Beaverdam Rn	5/22
Bens Ck	4/17, 5/15
Bens Ck, S Fk	4/17, 5/15
Blue Hole Ck	5/1
Breastwork Rn	4/24
Brush Ck	4/24
Casselman R	5/1
Clear Shade Ck	4/17, 5/8, 5/22
Cub Rn	4/17
Elk Lick Ck	4/17
Fall Ck	5/1
Flaugherty Ck	4/17
Gladdens Rn	5/8
Jones Mill Rn	4/17, 5/8, 5/15, 5/22
Juniata R, Raystown Br	4/24
Kimberly Rn	5/1, 5/8
Kooser Lk	4/17*, 5/1*, 5/8, 6/26
Kooser Rn	4/17, 5/1, 5/8
Laurel Hill Ck	4/17, 4/24, 5/1, 5/8, 10/9
Laurel Hill Lk	4/17*, 5/1*, 5/22, 10/9, 12/18, 2/5/01
McClintock Rn	5/15
Middle Ck	5/15
Miller Rn	4/17
Piney Ck	5/1, 5/22
Piney Rn	5/22
Shafer Rn	5/15
Shaffers Rn	4/24
Stony Ck	5/15, 5/29
Tub Mill Rn	4/17
Whites Ck	4/24
Wills Ck	5/8, 5/22, 5/29
Youghiogheny R	4/17, 5/1, 5/8, 5/22, 6/5, 6/26, 7/31, 8/28, 10/9, 2/5/01
Sullivan County	
Double Rn	4/24
Elk Ck	4/24
Fishing Ck, W Br	5/1
Hoagland Br	4/24
Hunters Lk	4/17*, 5/1*, 5/15*, 10/2, 11/13, 2/26/01
Loyalsock Ck	5/8, 5/22
Loyalsock Ck, Ltl	5/1

** = Saturday stocking. See separate listing.*

Waterway	*Week of:*
Sullivan County continued	
Mehoopany Ck, N Fk	4/24
Mill Ck	5/1
Muncy Ck	4/24, 5/1
Pole Bridge Rn	5/1
Rock Rn	5/15

Susquehanna County

Fall Bk	4/17
Gaylord Ck	5/1
Lackawanna R	4/17, 4/24
Martin Ck	4/24
Meshoppen Ck	4/24
Meshoppen Ck, W Br	4/24
Nine Partners Ck	5/8
Quaker Lk	4/17, 10/30
Salt Lick Ck	4/24, 5/8
Silver Ck	5/1
Snake Ck	4/17
Starrucca Ck	5/15
Tunkhannock Ck	5/15
Tunkhannock Ck, E Br	4/24
Wyalusing Ck, E Br	4/17
Wyalusing Ck, Md Br	4/17
Wyalusing Ck, N Br	4/17

Tioga County

Asaph Rn	4/24
Asaph Rn, Lf	4/24
Beechwood Lk	4/17*, 5/1*, 5/15, 12/18, 2/26/01
Cowanesque R	4/17
Lake Hamilton	4/17*, 5/1*, 10/2, 11/13, 2/26/01
Long Rn	4/17, 4/24, 5/1
Marsh Ck	5/22
Mill Ck	4/24
Pine Ck	4/17, 4/24, 5/1, 5/8, 5/15, 5/22
Roaring Bk	5/22
Stony Fk	5/1
Stony Fk, E Br	5/1
Tioga R	4/17

Union County

Buffalo Ck	5/8, 5/22
Buffalo Ck, N Br	5/8
Halfway Lk	4/17*, 5/22*, 10/16, 11/6
Laurel Rn	5/1
Penns Ck	5/1
Rapid Rn	5/22
Spring Ck	5/1
Spruce Rn	5/22
White Deer Ck	4/24, 5/1, 5/15, 10/16

Venango County

East Sandy Ck	5/22
Hemlock Ck	5/1
Horse Ck	5/1
Justus Lk	5/15*, 5/22*, 10/16, 11/6, 2/19/01
Mill Ck	5/1
Oil Ck	4/24, 5/1, 5/8, 10/16
Pine Rn	5/1
Pithole Ck	5/8, 5/15
Pithole Ck, W	5/15

Waterway	*Week of:*
Venango County continued	
Prather Ck	5/15
Sandy Ck	5/1, 5/8
Sandy Ck, Ltl	5/15, 10/16
Scrubgrass Ck, Ltl	5/1
Sugar Ck	4/17, 5/1, 5/15
Sugar Ck, E Br	5/15
Sugar Ck, Ltl	5/22
Two Mile Rn, Lw	5/15
Two Mile Rn, Up	5/15, 5/22

Warren County

Blue Eye Rn	5/15
Brokenstraw Ck	4/24, 5/15
Brokenstraw Ck, Ltl	5/8
Browns Rn	5/1
Caldwell Ck	5/1, 5/15, 10/9
Caldwell Ck, W Br	5/15
Chapman Lk	4/24*, 5/8*, 5/22, 12/4, 1/8/01
Farnsworth Br	4/17, 5/1, 5/15, 5/22
Fourmile Rn	5/15
Hemlock Rn	5/1
Hickory Ck, E	5/1
Hickory Ck, W	5/1
Jackson Rn	5/22, 10/16
Perry Magee Rn	5/8
Pine Ck	5/15, 5/22
Queen Ck	5/1
Sixmile Rn	5/15
Sixmile Rn, N Fk	5/15
Spring Ck	5/8
Spring Ck, E Br	5/8
Thompson Rn	4/17, 5/1, 5/8, 5/29
Tidioute Ck	5/8
Tionesta Ck	4/17, 4/24, 5/1, 5/8
Tionesta Ck, E Br	4/24
Tionesta Ck, S Br	5/1, 5/22
Tionesta Ck, W Br	4/24, 5/1, 5/22, 10/9
Twomile Rn	5/8

Washington County

Aunt Clara Fk	4/24
Canonsburg Lk	4/17, 4/24, 5/1*, 5/8, 5/15*, 5/22, 10/16, 11/6, 2/19/01
Chartiers Ck, Ltl	4/17, 5/8, 10/16
Dutch Fk Ck	4/17, 10/16
Dutch Fk Lk	4/17, 4/24, 5/1*, 5/8, 5/15*, 5/22, 10/16, 11/6, 2/19/01
Enlow Fk	4/17, 5/1
Kings Ck	4/24
Millers Rn	4/24, 5/22, 10/16
Mingo Ck	4/17, 4/24, 5/8, 5/22
Pike Rn	4/17, 5/1, 10/16
Templeton Fk	4/17
Tenmile Ck	4/17, 5/1

Wayne County

Butternut Ck	4/24, 10/2
Dyberry Ck	4/17, 5/8, 5/15, 10/2
Dyberry Ck, E Br	4/17, 5/1, 5/8, 5/15
Dyberry Ck, W Br	5/1
Equinunk Ck	5/15
Jones Ck	4/24

Waterway	*Week of:*
Wayne County continued	
Lackawanna R	4/17, 4/24
Lackawaxen R	4/17, 4/24, 5/15, 10/2
Lackawaxen R, W Br	4/17, 5/15
Long Pd	4/17, 5/15, 10/30
Upper Woods Pd	4/24*, 5/8*, 5/15*, 10/30, 1/29/01
Van Auken Ck (Waymart Br)	4/17
Wallenpaupack Ck, W Br	5/1

Westmoreland County

Donegal Lk	4/17, 4/24*, 5/1*, 5/8, 5/15, 5/22, 12/4, 2/19/01
Fourmile Rn	5/8, 5/15
Hannas Rn	4/24
Hendricks Ck	5/22
Indian Ck	4/17, 10/9
Indian Lk	5/1, 5/15, 10/9
Jacobs Ck	4/24, 5/22
Keystone Lk	4/17, 4/24*, 5/1*, 5/8, 5/22, 10/9, 12/4, 2/19/01
Linn Rn	4/17, 5/8
Loyalhanna Ck	4/24, 5/8, 5/15, 5/22, 10/9
Mammoth Dm	4/17, 4/24*, 5/1*, 10/9, 2/19/01
Mill Ck	4/24
Northmoreland Lk	4/17, 5/8*, 5/15*, 10/9, 2/19/01
Roaring Rn	4/17
Sewickley Ck, Bg	4/17, 5/8
Tubmill Ck	5/22
Twin Lk, Lw	4/17, 5/1, 5/8, 5/15, 10/16, 12/4, 2/19/01
Twin Lk, Up	12/4

Wyoming County

Bowman Ck	5/1, 5/15, 5/22, 10/2
Horton Ck	4/24
Lake Winola	5/15, 10/30
Leonard Ck	5/15
Mehoopany Ck	4/24
Mehoopany Ck, N Fk	4/24
Meshoppen Ck	4/17, 4/24
Meshoppen Ck, W Br	4/24
Oxbow Lk	4/17, 10/2
Riley Ck	4/17
Tunkhannock Ck, S Br	4/24, 5/1, 5/22, 10/2

York County

Bald Eagle Ck	4/17
Beaver Ck	4/24
Blymire Hollow Rn	4/17
Codorus Ck	4/17, 5/1
Codorus Ck, E Br	4/17, 5/1, 5/22
Codorus Ck, S Br	4/17, 5/1
Fishing Ck	4/17, 4/24, 5/1, 5/8
Glatco Lk	4/17
Leibs Ck	4/17
Lk Marburg	4/17
Muddy Ck	4/24, 5/1, 10/2
Muddy Ck, N Br	4/24, 5/8
Muddy Ck, S Br	4/17
Otter Ck	4/24, 5/8
Sheppard Myers Dm	4/17, 10/2, 12/11
Yellow Breeches Ck	4/17, 5/8

***** = Saturday stocking. See separate listing.*

Pennsylvania's Year 2000 Approved Trout Waters

Saturday Stockings

At its January 1997 meeting, the Pennsylvania Fish & Boat Commission created Saturday stockings on some publicly owned lakes as a way to increase and diversify fishing opportunities. All these Saturday stockings are inseason, beginning after the April 15 trout season opener. Since 1978, Commission practice has been to announce only the week that waters will receive inseason stockings. That policy will continue on the vast majority of trout-stocked waters. By announcing these special Saturday stockings and their locations on public lakes, the Commission hopes to serve segments of the angling public that may benefit from fishing immediately after fish are stocked.

Because of conditions beyond the Commission's control (weather, pollutions, posting, mechanical failures in stocking trucks, etc.), last-minute changes in stocking schedules may occur. In such instances, the district waterways conservation officer will attempt, when possible, to notify the local media of these changes. However, if the changes occur after local media deadlines or the officer is committed to other assignments, notice of the changes may not occur.

Waterway	*Date*	*Time*
Allegheny County		
Deer Lks	5/13	2:00pm
Deer Lks	5/20	2:00pm
North Park Lk	5/13	3:45pm
North Park Lk	5/20	3:45pm
Beaver County		
Brady Rn Lk	4/22	1:30pm
Brady Rn Lk	5/6	1:30pm
Hereford Manor Lk, Lw	4/29	1:15pm
Hereford Manor Lk, Lw	5/13	1:15pm
Hereford Manor Lk, Up	4/29	1:15pm
Hereford Manor Lk, Up	5/13	1:15pm
Raccoon Lk	4/29	1:45pm
Raccoon Lk	5/6	1:45pm
Berks County		
Angelica Lk	4/22	11:45am
Blair County		
Canoe Lk	4/22	10:30am
Canoe Lk	5/6	10:30am
Bucks County		
Levittown Lk	4/22	12:00pm
Levittown Lk	5/6	12:00pm
Levittown Lk	5/13	12:00pm
Butler County		
Glade Run Lk	4/22	1:30pm
Glade Run Lk	5/6	1:30pm
Cambria County		
Duman Dm	4/22	11:00am
Duman Dm	5/6	11:00am
Lk Rowena	4/22	11:00am
Lk Rowena	5/6	11:00am
Cameron County		
George B. Stevenson Rs	5/6	11:00am
George B. Stevenson Rs	5/13	11:00am
George B. Stevenson Rs	5/27	11:00am
Centre County		
Poe Lake	4/22	10:00am
Poe Lake	5/13	10:00am
Clearfield County		
Goss Run Dm	4/22	3:00pm
Goss Run Dm	5/13	12:00pm
Janesville Dm	5/13	10:30am
Parker Lk	4/22	10:45am
Parker Lk	5/27	10:45am
Tannery Dm	4/22	1:00pm
Tannery Dm	5/27	1:00pm
Clinton County		
Kettle Ck Lk	4/22	10:45am
Kettle Ck Lk	4/29	10:45am
Kettle Ck Lk	5/20	10:45am
Columbia County		
Briar Creek Lk	4/22	11:30am
Briar Creek Lk	4/29	11:30am
Briar Creek Lk	5/6	11:30am
Cumberland County		
Childrens Lk	5/13	9:30am
Childrens Lk	5/20	9:30am
Doubling Gap Lk	4/22	9:30am
Doubling Gap Lk	5/6	9:30am
Fuller Lk	5/20	9:30am
Laurel Lk	4/22	9:30am
Laurel Lk	5/6	9:30am
Laurel Lk	5/13	9:30am
Laurel Lk	5/20	9:30am
Opossum Ck Lk	4/22	9:30am
Opossum Ck Lk	5/6	9:30am
Opossum Ck Lk	5/13	9:30am
Elk County		
Laurel Rn Rs	4/29	11:00am
Laurel Rn Rs	5/6	11:00am
Ridgway Rs	4/29	11:00am
Ridgway Rs	5/6	11:00am
Twin Lks	4/29	11:00am
Twin Lks	5/6	11:00am
Erie County		
Lake Pleasant	5/6	9:00am
Lake Pleasant	5/27	9:00am
Upper Gravel Pit	4/22	9:30am
Fayette County		
Dunlap Ck Lk	4/22	11:00am
Dunlap Ck Lk	5/13	10:30am
Virgin Rn Dm	4/29	10:30am
Virgin Rn Dm	5/13	10:30am
Franklin County		
Letterkenny Rs	5/6	11:00am
Fulton County		
Cowans Gap Lk	5/13	11:45am
Cowans Gap Lk	5/20	11:45am
Greene County		
Duke Lk	4/29	2:00pm
Duke Lk	5/13	2:00pm
Huntingdon County		
Greenwood Lk	4/29	9:45am
Greenwood Lk	5/13	11:00am
Whipple Lk	4/29	11:00am
Whipple Lk	5/13	9:45am
Indiana County		
Blue Spruce Lk	4/22	12:45pm
Blue Spruce Lk	5/13	12:45pm
Lackawanna County		
Aylesworth Ck Lk	4/22	2:30pm
Aylesworth Ck Lk	5/6	2:30pm
Merli-Sarnoski Lk	4/22	2:30pm
Merli-Sarnoski Lk	5/6	2:30pm
Merli-Sarnoski Lk	5/13	2:30pm
Merli-Sarnoski Lk	5/20	2:30pm
Lancaster County		
Muddy Run Rec Lk	4/29	11:30am
Lawrence County		
Bessemer Lk	4/22	2:00pm
Bessemer Lk	5/13	2:00pm
Cascade Quarry	4/22	2:00pm
Lehigh County		
Leaser Lk	4/22	1:15pm
Leaser Lk	4/29	12:15pm

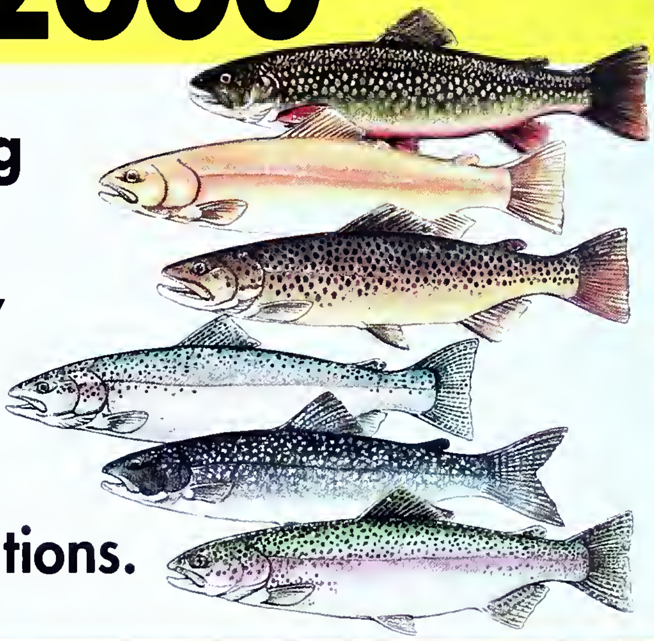
Waterway	*Date*	*Time*
Luzerne County		
F E Walter Rs	5/6	11:30am
F E Walter Rs	5/20	11:30am
Frances Slocum Lk	4/29	11:45am
Irena Lk	4/22	11:45am
Irena Lk	4/29	12:00pm
Irena Lk	5/20	11:30am
Lily Lk	4/29	12:00pm
Lily Lk	5/13	12:00pm
Moon Lk	4/22	11:45am
Moon Lk	4/29	11:45am
Moon Lk	5/6	11:45am
Moon Lk	5/13	11:45am
Lycoming County		
Little Pine Lk	4/29	10:30am
Little Pine Lk	5/6	10:30am
McKean County		
Bradford Rs #3	4/29	10:00am
Bradford Rs #3	5/13	10:00am
Hamlin Lk	4/29	10:00am
Hamlin Lk	5/13	10:00am
Monroe County		
Snow Hill Dm	4/22	4:00pm
Snow Hill Dm	4/29	3:30pm
Tobyhanna Lk	4/29	2:00pm
Northampton County		
Minsi Lk	5/6	12:00pm

Waterway	*Date*	*Time*
Perry County		
Allen Holman Lk	4/29	9:30am
Pike County		
Promised Land Lk, Lw	4/22	2:30pm
Potter County		
Lyman Lk	4/29	10:00am
Lyman Lk	5/13	10:00am
Somerset County		
Kooser Lk	4/22	10:00am
Kooser Lk	5/6	10:00am
Laurel Hill Lk	4/22	10:00am
Laurel Hill Lk	5/6	10:00am
Sullivan County		
Hunters Lk	4/22	11:00am
Hunters Lk	5/6	11:00am
Hunters Lk	5/20	11:00am
Tioga County		
Beechwood Lk	4/22	10:00am
Beechwood Lk	5/6	10:00am
Lake Hamilton	4/22	10:00am
Lake Hamilton	5/6	10:00am
Union County		
Halfway Lk	4/22	10:00am
Halfway Lk	5/27	10:00am

Waterway	*Date*	*Time*
Venango County		
Justus Lk	5/20	12:45pm
Justus Lk	5/27	12:45pm
Warren County		
Chapman Lk	4/29	9:30am
Chapman Lk	5/13	9:30am
Washington County		
Canonsburg Lk	5/6	1:30pm
Canonsburg Lk	5/20	4:00pm
Dutch Fk Lk	5/6	4:00pm
Dutch Fk Lk	5/20	2:00pm
Wayne County		
Upper Woods Pd	4/29	3:00pm
Upper Woods Pd	5/13	3:45pm
Upper Woods Pd	5/20	3:45pm
Westmoreland County		
Donegal Lk	4/29	2:00pm
Donegal Lk	5/6	2:00pm
Keystone Lk	4/29	12:00pm
Keystone Lk	5/6	12:00pm
Mammoth Dm	4/29	2:00pm
Mammoth Dm	5/6	2:00pm
Northmoreland Lk	5/13	12:30pm
Northmoreland Lk	5/20	12:30pm

PENNSYLVANIA FISH & BOAT COMMISSION

CREEL LIMIT CHANGE FOR 2000



The creel limit for trout during regular season has been reduced from 8 trout per day to 5 trout per day on all "Commonwealth Inland Waters" except those under special regulations.

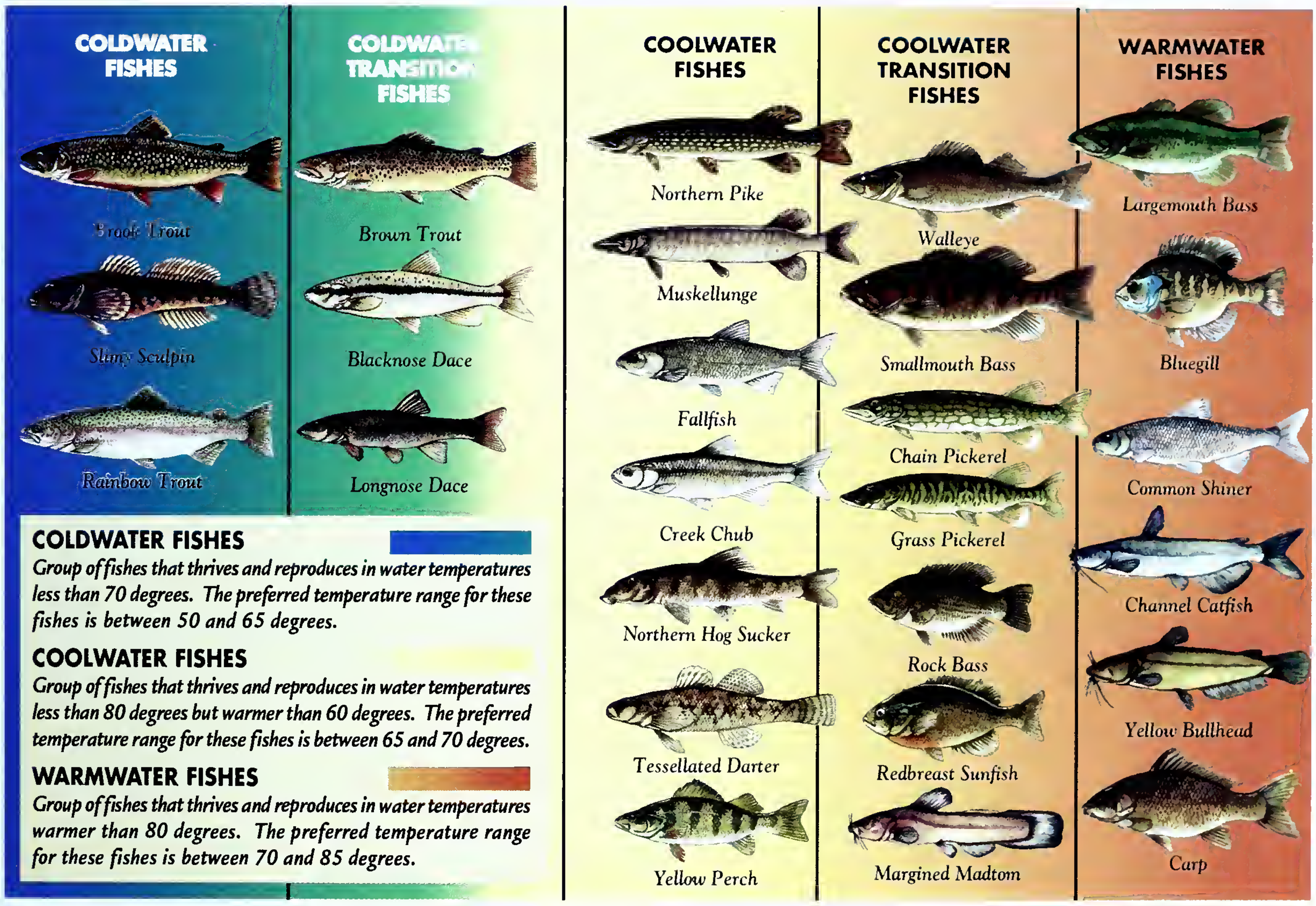
ATTENTION TROUT ANGLERS!

CONSERVE 2000

SMART Angler's Notebook

by Carl Richardson

WATER TEMPERATURE AND FISH



COLDWATER FISHES 🟦

Group of fishes that thrives and reproduces in water temperatures less than 70 degrees. The preferred temperature range for these fishes is between 50 and 65 degrees.

COOLWATER FISHES 🟨

Group of fishes that thrives and reproduces in water temperatures less than 80 degrees but warmer than 60 degrees. The preferred temperature range for these fishes is between 65 and 70 degrees.

WARMWATER FISHES 🟧

Group of fishes that thrives and reproduces in water temperatures warmer than 80 degrees. The preferred temperature range for these fishes is between 70 and 85 degrees.

Habitat influences the species and numbers of fish found in a waterway. If the habitat meets a fish's needs, it can survive there. If the habitat doesn't meet the fish's needs, it won't be found there. One very important habitat factor is water temperature. The temperature of a waterway is determined by many variables. Water temperature is influenced by the time of year, the amount of sunlight reaching the water, the amount and speed of the water (flowing water and currents), the source of the water (springs or runoff), and the amount of material suspended in the water.

Fish can't maintain their body temperature at a constant level as humans and other warm-blooded animals can. They are what biologists call "ectotherms." The temperature of their surroundings influences their body temperature and bodily functions. This is why water temperature is such an important habitat factor for fish.

Each fish species has a specific range of water temperatures in which it can live. If the water is outside that range, it can't survive. Within that range is a narrower range of temperatures. This is called a fish's "preferred temperature." Fish can live, grow and reproduce when they are within their preferred temperature range. The preferred temperatures are ideal for the fish's survival.

Biologists group fish with similar temperature preferences into three groups: Cold, cool and warm. Fish in a group often have other similar habitat needs. The groups do overlap, however. They overlap because temperature preferences among groups overlap. The habitats where they overlap are called "transition waters." Transition waters may be ideal for one group, but not for both. Brown trout, for example, are considered coldwater fish. However, they can tolerate warmer water than brook trout. Because they can tolerate higher water temperatures, they may be found with coolwater fish and in transition waters.

Habitat and the Brook Trout

by Walt Dietz

This article is the second in a series of articles on the major topics of concern in the Commission's theme, "Conserve 2000." This feature explains the global, regional and local aspects of the topic of fish habitat with the state fish, the brook trout, as the focal point. Because the brook trout is a Pennsylvania native, we can readily see the effects of human activity on this species and its habitat over several hundred years.

CONSERVE 2000
PROTECT PENNSYLVANIA'S WATERS

Pennsylvania's old-growth forest might have looked like this at one time. There were big trees and plenty of shade. This timber in Warren County was one of the last remaining stands of virgin forest in our state. The area was cut in the early 1900s.

photo-Pennsylvania State Archives

Have you ever caught a wild brook trout? If you have, you were probably awed by its orange belly, red spots and the green markings on its back. It's one of Pennsylvania's most colorful fish. But you probably didn't catch it just anywhere. Wild brook trout need the coldest and cleanest water, like that which flows in a small stream beneath a shady forest. Today, most of these shaded streams can be found only in the forested mountains. That's because much of our landscape has been opened up to agriculture and development. Can you imagine what the state might have been like 400 years ago? Pennsylvania was entirely forested then and nearly every stream had a wild brook trout in it.

Before the 1600s, wild brook trout were widely distributed throughout the state. They could be found in just about every watershed, including the Ohio, Allegheny, Susquehanna and Delaware. Pennsylvania provided the perfect habitat for the native brook trout because of the forests.

The area that became Pennsylvania includes nearly 29 million acres. Very few clearings could be found before the 1600s, except for those made by natural events or Native Americans. No wonder it was named *Pennsylvania*. "Penn," for William Penn, the Quaker leader who purchased the land from the Indians, and *sylvania*, which is Latin for "woods."

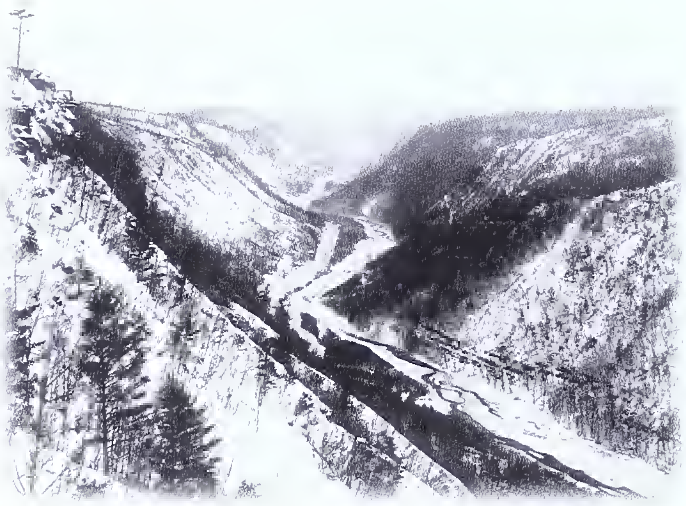
This blanket of forest was important to the health of streams and rivers. Tall hemlocks, white pine and a variety of deciduous trees shaded the valleys. Shade kept the water temperatures cold. Trees protected the banks from erosion. Gravel stream bottoms were clean and unsilted. There was plenty of food and shelter among the submerged tree roots. The conditions were perfect for brook trout survival and reproduction.

photo-Pennsylvania State Archives

Lumbermen remove bark from a large eastern hemlock. This bark provided the tannin used to tan animal hides. The Poconos became the nation's largest leather producer in the mid-1800s. Eventually the Poconos were stripped of trees.

Changing landscape

The landscape changed when European settlers arrived and began to cut the forests in the 1600s and 1700s. This activity changed the habitat of the native brook trout. There seemed to be an endless supply of trees at that time. There were so many trees that the first settlers looked at the forests as a hindrance. They cut timber for fuel, homes, furniture and tools. Still, the early settlers hardly had an effect on the state's endless forest.


Once an area was cut, it was left bare and the lumbermen moved to a new forest. Deforested areas were never replanted. These clear-cut mountains around Kettle Creek, Clinton County, show the devastation after timbering.

Large amounts of timber were not really cut until the early 1700s. Europeans had already overexploited their own resources. They sought to develop the New World and use its abundant resources. Pennsylvania timber became a valuable commodity. It fed a growing country and a global economy, but not without consequences to our local forests and waters.

Shipbuilding was the first industry to take advantage of the state's trees. England needed timber to build ships, so the White Pine Act of 1722 was created. It reserved all the white pines for the British Navy. Lumber was used to make hulls. "Spars," long white pine logs, were used for masts. Can you imagine the size of a tree needed for the main ship mast? The minimum size was 96 feet tall and 15 inches in diameter at the top. A spar's size made it hard to transport. That's why the first trees to be cut were those closest to major riverbanks—not good for the health of aquatic habitats. The banks of eastern rivers like the Delaware and the Susquehanna became the first targets. Trees were felled by hand and the logs were pulled to the water by oxen. Logs were then floated to Baltimore and Philadelphia. Lumber and spars were shipped back to England and made into ships. Those ships were later used against America during the revolutionary war and for exploration of new frontiers. Imagine the importance that Pennsylvania trees had in the world's economy and history!

Industrial heritage

The new country's population was growing in the early 1800s. And forest resources were needed to meet its demands. This is when large-scale timbering began. Wood became an important part of America's industrial heritage. The iron, tanning and lumber industries all relied on forests.

In the early 1800s, Pennsylvania became an important source of iron. Making iron required wood for charcoal. It was the fuel used to melt iron ore. Most of the forests had already been cut near the river valleys for the shipbuilding industry. So the mountainsides of central Pennsylvania became the next focus. Iron ore was present and trees were abundant. Iron furnaces were established and entire communities would be built up around them.

By 1860, there were 150 iron furnaces in Pennsylvania. They required over 1.5 million acres of trees per year. That's a lot of trees cut down to produce a lot of iron. This iron fed a growing nation and a growing world. That's right–Pennsylvania iron was an important part of the global economy. Take the small town of Axemann in Centre County, for example. It once produced iron ax heads that were shipped all over the world.

The landscape around iron furnaces was eventually stripped bare of trees. Only open clear cuts were left.

The tanning industry also relied heavily on the use of trees. Tree bark provided the tannin that was used to "tan" animal hides. The best source for tannin was the bark of eastern hemlocks. The best place to find plenty of hemlocks was northeast Pennsylvania. Counties like Monroe and Pike became the location of several important tanneries. Buffalo hides were brought from the West to these tanneries. By the mid-1800s, the Pocono region became the second largest leather producer in America. That's how places like Tannersville, in Monroe County, got its name. Eventually the areas around the tanneries also ran out of trees. By the 1800s, much of the landscape in northeastern Pennsylvania was deforested.

The lumber industry took advantage of the central portion of the state. This area was still heavily forested. But transporting large logs from these remote areas was a problem. The solution was splash dams. They were built on small mountain streams to impound and stop the flow of water. Trees were pulled to the empty streambed, the dam was opened and water pushed the trees to the next dam. Can you imagine the effect that splash dams had on brook trout habitat? The trees could be transported from remote areas to major rivers, like the Susquehanna and Allegheny.

Booms were constructed on the rivers to catch and hold the logs. Logs were then formed into huge "rafts" and floated downriver to Williamsport, Philadelphia, Harrisburg and even as far away as New Orleans.

Pennsylvania's lumber industry also had an important place in history. Take, for instance, Williamsport, which had many sawmills. It became the world's largest lumber producer by 1880.

Stream and river habitats

By the late 1800 to early 1900s, almost all areas of Pennsylvania had been cut at least once. Forest cutting up to this time was not really managed with sustainability in mind. Environmental effects were not considered. The effect of logging on streams and rivers was not even considered. Loggers would move on to a new area once the trees were cut. The result was that our stream and river habitats were degraded. So was the water quality. Without trees for shade, water temperatures rose. The higher temperatures became too stressful for brook trout. There was no vegetation to hold the soil.

Erosion washed silt into prime spawning habitat. The silt covered the gravel and made it impossible for brook trout to reproduce. The aquatic insects that brook trout feed on could not survive. Shelter in the form of tree roots was lost. The result was that native brook trout populations were depleted from much of their original range.

A log boom in Williamsport holds back logs for later transport. The number of trees behind this boom gives an idea of just how many trees were cut from the surrounding mountains.

Depleted fish populations brought about concern. The aristocracy of the New World enjoyed sport fishing, but there were no fish! Their solution to the problem was to stock new fish. There was little thought about restoring or improving habitat. They believed that stocking fish would bring back good populations. It also gave them an opportunity to duplicate the species that they once caught in their homeland–Europe. So they brought in carp during the mid-1800s. Smallmouth bass were introduced from the Potomac River. They were released into the Delaware and Susquehanna rivers during the 1870s. Brown trout from Europe were introduced in the late 1800s. Rainbow trout were eventually transferred from western North America to the East Coast. Brown, rainbow and brook trout were raised in hatcheries and then released into the wild.

Little did they know that they were providing a source of competition for the native brook trout. When they co-exist in the same habitat, brown trout compete with brook trout for resources.

Lessons from the past

Today things are much different. We have learned many lessons from the past. The way we go about managing and protecting Penn-sylvania's forests and waters has improved. Forestry practices have changed and many important habitat management methods have been learned over the years. Landscape ecology is evaluated before cutting forests. In most cases, forests are no longer clear-cut. Cutting rotations are ecologically based and managed more carefully. Timbered areas are replanted after trees are removed. Some mature trees are left standing to act as a seed stock for new trees. Vegetation buffers are left along streambanks and roads. Buffers minimize the effects of logging operations. These techniques result in healthier forests. They also result in better water quality.

The way in which we manage fisheries in Pennsylvania has also changed. The Fish & Boat Commission follows a plan for streams and rivers that are cold enough to hold trout. Waters are grouped as "wild" or "hatchery-supported." There are several criteria that fisheries biologist use. A wild trout fishery must also be able to sustain a naturally reproducing population of wild trout. It must provide adequate habitat. These waters are labeled "Class A Wild Trout Waters" and are not stocked. In this way, wild brook trout are managed more like a renewable natural resource.

Streams that cannot support wild trout are stocked with hatchery-raised trout. Stocking provides the opportunity for anglers to catch a trout, in a stream that would normally not allow them to reproduce on their own. Chances are there is a hatchery-supported trout stream only minutes from your home.

Riparian buffers

Habitat protection and enhancement play an important support role in fisheries management. A focal point for protecting and enhancing aquatic habitats is riparian buffers. A riparian buffer is a zone of trees and vegetation between water and an upland area. Riparian buffers are important to the health of a stream. They shade the water, stabilize banks and intercept surface runoff. Studies show that water temperature is 10 degrees cooler in streams that are lined with buffers. They purify runoff by trapping sediment, fertilizers and pollution. They even provide food in the form of leaf litter for aquatic insects. The insects in turn are food for forage fish and trout. Ultimately, we can improve fish populations if we protect and enhance riparian buffers.

The Commission, along with other agencies, also protects habitat through laws and regulations. People who want to alter a stream or river in any way must apply for a special permit. The request is reviewed to make sure that the habitat will not be degraded. The Commission enforces habitat protection laws that are broken. The Commission is also involved with many stream and river enhancement projects through its Adopt-a-Stream Program. This program is one of the ways in which individuals and organizations can help. It's a cooperative effort that improves and protects aquatic and riparian habitats. The program provides assistance for those willing to donate time and effort toward waterway protection and enhancement. Projects might include fish habitat restoration, stream corridor management and stabilization projects.

Environmental conditions in Pennsylvania are much improved. Our forests and waters have rebounded thanks to the efforts of many agencies, organizations and individuals. Hardwood forests now cover nearly 60 percent of the Commonwealth. These forests protect more than 25,000 miles of streams and provide clean water for aquatic animals. Around 13,000 miles of streams are clear and cold enough to support trout. Wild brook trout populations have also improved. Their numbers and dispersal in watersheds isn't what it was before the 1600s. Nevertheless, they can once again be found over much of the terrain they once inhabited.

Bioblitz!

by Karl Blankenship

With a battery pack strapped to his back for electrofishing, Andrew Shiels stepped into the woods, then paused. He turned and cautioned the crew following his lead. "Watch where you step," warned Shiels, the Fish & Boat Commission Nongame and Endangered Species Unit Leader. "We've already had one copperhead."

But that was a good thing. Though headed to Stony Creek to electrofish, the crew was on a mission to find and identify as many fish, amphibians and reptiles as they could in a 24-hour period.

The Fish & Boat Commission crew was among nearly 200 biologists from Pennsylvania, surrounding states–even other countries–who were turned loose on a 10-square-mile area of game lands for 24 hours last June. Their object: Identify as many species as they could.

It was all part of something called, appropriately, a "bioblitz"–a rapid assessment of what was living in a particular area at a given time. Bioblitzes have taken place in Pennsylvania before, both in the Philadelphia and Pittsburgh area. But those events were primarily aimed at city or regional parks. The blitz on State Gamelands 211, in Lebanon County, by contrast, took biologists into the wild.

Scientists headed into the woods starting at noon on one day, and continued until noon the next day, gathering thousands of specimens of plants, fungi, insects and other animals. They identified them in the field, or brought them back to "base camp"–a collection of tents borrowed from the National Guard–where others pored through books trying to identify the critters.

Admittedly, the 24-hour operation would not find every species in the study area. Some insects, fungi and bird species can only be seen at certain times of the year and under certain conditions. "It's a seasonal snapshot of what's here," acknowledged Jerry Hassinger, a Game Commission biologist who organized the bioblitz.

The bioblitz helped to concentrate experts from all over who otherwise might not have visited Gamelands 211. The Wild Resource Conservation Fund financed the survey, paying $8,000 for food and logistical support for participants. Free lodging was provided by the National Guard in barracks at Fort Indiantown Gap. In exchange, the blitz drew scientific expertise worth more than $100,000, estimated Frank Felbaum, executive director of the fund.

The Fish & Boat Commission's involvement tied in with a continuing effort to develop an "index of biological integrity" for streams–a measuring stick to determine the health of waterways based on the types and diversity of species present. Instead of just focusing on game fish, as they normally do, the biologists would be looking for all kinds of fish in the water and count each kind.

The Commission had planned the Stony Creek survey to coincide with the bioblitz. But the Commission's team helped with more than just fish. After doing the stream work, they entered the woods and fields scouting for "herps"–reptiles and amphibians.

Their discoveries started before they even got to Stony Creek. Hiding behind a log was a large, old wood turtle.

Soon, they were stunning fish so they could be scooped out of the stream with a net and identified. Brook trout, chain pickerel, tesselated darter and so on. The fish were held in a bucket until the survey was completed. Then they were released.

For the most part, scientists didn't expect to uncover many rare species during the survey. Instead, they were largely interested in what was common in the area–and how that might change in the future. Losses of rare species can indicate something is amiss, but future changes in abundance of some of these more common species would also raise serious red flags. And because they are common, many–whether frogs or mayflies–have never been comprehensively surveyed.

Although the state has been settled for more than 300 years, Penns Woods came with no owners manual and–perhaps more critically–no parts list. Aldo Leopold, writing of the importance of natural diversity in "A Sand County Almanac," observed that "to keep every cog and wheel is the first precaution of intelligent tinkering."

But people have been tinkering with the state's land for hundreds of years, and they have lost some cogs and wheels. The passenger pigeon, wolverine, gray wolf, moose, bison, Blanding's turtle, tiger salamander, greater prairie chicken and Bachman's sparrow are among the cogs Pennsylvania is missing.

In the end, the exhausted biologists had compiled an impressive list of "cogs" for Gamelands 211. There was a coyote. At least two people saw a black bear. There were, of course, white-tailed deer. And poison ivy. The list went on, and on: Teaberry, wineberry, American holly, black gum, painted trillium, deer fly, southern flying squirrel, blue-headed warbler, snapping turtle, ovenbird, spring peeper, wood frog, screech owl, turkey, green frog, copperhead snake, black rat snake and northern dusky salamander.

Some results were truly impressive. Ninety species of birds were observed in the bioblitz tract, nearly half the number known to nest in the state. And only 22 percent of the more than 400 species of plants found were nonnative, compared with a state average of 37 percent.

Biologists even found the unusual. "We found a loon," Hassinger said. "This is not loon habitat. But we found a loon. It was a dead loon, but we found it." He speculated it had been blown off course in a storm, and ended up in Gamelands 211.

All told, they counted somewhere in the neighborhood of 1,250 species–including 8 fish and 22 reptiles and amphibians.

The biggest category was insects, of which there were about 450. But John Rawlins, an entomologist with the Carnegie Museum in Pittsburgh, said the list could grow by as much as 20 percent when final identifications are made on all the thousands of specimens collected.

"There are many groups that require study beyond the ability of anybody in Pennsylvania," he said. One insect family that turned up, *Sarcophagidae*–which means "muscle eater," found in caterpillars and other things–can't be identified at the species level by anyone in the United States. Also, the insect count may have been reduced because of cool conditions during the bioblitz. "It's a low species number," Rawlins said, "but the main thing is getting a representative sample of species."

Indeed, before the bioblitz, no one could say with confidence that most of the 1,250 species were actually in state Gamelands 211. Now they can. Biologists admitted they didn't count everything–one scientist estimated that the 34 species of spiders observed may be only 10 percent of what was present. But now they know which gaps to try to fill with future surveys. As Hassinger pointed out, "We increased our knowledge about State Gamelands 211 by 1,000 percent."

Notes from the Streams

PFD testimonial

Ever wonder why WCOs wear their PFDs when they are working on a boat? The reason is because they never know when an accident may happen. As statistics show, capsizing is the most common type of boating accident. WCO Stuckey and I had firsthand experience with just such a situation.

A group of us was on a short canoe trip on Bald Eagle Creek, Centre County. About 15 minutes from the conclusion of our trip, WCO Stuckey and I found we were falling behind the others (the fishing was too good not to make a few short stops). As we came to a split at a small island, we chose to paddle left (everyone else had gone right) and encountered a tree across our path.

By the time we saw the tree, we realized it had created a strainer and we were already caught in its power. In what seemed like seconds, we were both in the water. The swift current pulled our canoe under and was attempting to do the same to us. Fortunately, we were able to gather our wits and pull ourselves to safety. Except for a few bruises to our pride, we were uninjured.

If we had not been wearing our PFDs, the incident may have ended differently. Our PFDs provided us with the ability to fight the current, and the piece of mind to make the right decisions. If we had not been wearing our PFDs, we would not have had the opportunity to put them on.

Remember–PFDs work only if you wear them!–*WCO Thomas Burrell, Delaware County.*

Are you sure?

Have you ever had the occasion to impose one of those odd, quizzical expressions in which one eyebrow is cocked way up and the other is frowning down? It takes a little practice, and once perfected should be used only in the most appropriate situation, like trying to convey the message, "Are you sure you want to ask that?" or "Are you sure you want me to answer that?" or "Did you hear what you just said?"

As a new officer, I've found that some questions I'm asked require answers that create more questions. Others are stated so that they require little more than an expression of acknowledgment.

Such was the case when I was approached by someone with the simple statement, "Uh, question, officer, I lost my license" (with eyebrows in the relaxed "Okay, I can answer this" position). My mind skimmed quickly through the replacement procedure. Before I could put thoughts into words, the statement was repeated. "Yeah, I lost my license." Then the added, "I'm not allowed to fish 'cause I lost my privileges. Can I still fish on Fish-for-Free Days?" The arched brows are now in the fully cocked "Oh, I get it now" position. Immediately the right brow uncocks into the droop of a frown. Combined with just the hint of a smile, the half-cocked look has the desired effect. No words, no debate, no confusion, no misunderstanding. With a sheepish grin the recipient of that odd, quizzical expression simply says, "That's a NO, right?"–*WCO Martha A. Mackey, Southern Allegheny County.*

Letterkenny litterer

From my location I needed a spotting scope to view the shoreline of the recently trout-stocked Letterkenny Reservoir. I observed a fisherman throw some beer cans at the base of a tree 10 yards behind him. I watched only a little while longer. Knowing I had a two-mile drive to the scene, I was worried about the possibility of the litterer leaving. As I was ending my observation, I saw another angler come up to the can-thrower. I gathered up my scope and chair and walked rapidly to the patrol car. While driving down the road to the shore access, I came upon a fisherman walking up the hill to his car. I saw several crushed cans in his landing net. I asked him if he had picked up the beer cans from behind the littering angler. He said that he always picks up littered cans and had indeed picked up the cans I had seen thrown. I was given the cans in question. After approaching the person still fishing but in a different spot, he admitted to littering. Even though I still believe in picking up after thoughtless fishermen, I am glad I spotted the catch in one angler's net to complete an arrest of another.–*WCO Jan C. Caveney, Franklin/Eastern Fulton Counties.*

First thing you do

While assisting WCO Steve Boughter in teaching a canoeing class one day, WCO Boughter was explaining some of the dangers of cold water. Steve asked the group, what is the first thing you do when you get cold–expecting someone to say, "You shiver." One young person raised her hand and said in all seriousness, "Get a blanket?"–*WCO Lawrence P. Dvorshock, Lycoming County.*

When WCOs talk, people listen

During a routine license check at Scott's Run Lake in French Creek State Park, a fisherman commented to me how much he appreciated the tip I gave him regarding musky fishing in the spillway at Blue Marsh Lake. He said he was amazed when his son caught a legal musky on his first cast (to tell you the truth...so was I).–*WCO John Sabaitis, Berks County.*

Stolen car pursuit

I always try to remind myself to be prepared for the unexpected. Less than one minute after leaving my residence to teach a basic boating course one February evening, I was requested by county radio to assist a Newville Police unit in the pursuit of a possibly stolen car that was heading directly toward me less than a half-mile away. His closest backup was PA State Police 15 miles away. Before I knew it, the suspect car was heading right toward my patrol car with the police car on his tail. At about 60 mph, the suspect car passed by to my right going through a residential yard and almost sideswiped my patrol car. I turned around and began to assist in the pursuit. As I crested a hill, I observed smoke and vehicle parts scattering as the suspect vehicle and police car crashed while attempting to negotiate a 120-degree sharp turn.

Miraculously, the two cars continued down the roadway side by side, smashing together. The police officer then reported that his brakes were out and requested that I take over the lead in the pursuit. Before doing so, the police officer crashed his car into a bridge abutment to get it stopped. I stopped to see if he was OK, and the police officer jumped in my car and we continued the pursuit. With the PA State Police helicopter and several ground units on the way, the police officer was on my low-band radio with county control and I was directing the helicopter on the high-band radio. We lost sight of the vehicle until a passerby informed us that it went up a private lane into the woods. We found the undrivable vehicle a few minutes later, stashed along an old logging road near a residence.

As the officer and I approached the vehicle, we found that the driver had fled. At that time we heard a voice yell "I give up," and we turned to the residence located close by. Leaving the back door of the house was the suspect with his hands high in the air, escorted by his aunt and uncle who talked him into giving up.

With the PA State Police helicopter circling directly overhead, the suspect was taken into custody by the police officer and me without further incident. Eight to 10 PA State Police, sheriff and DCNR units arrived minutes later. Although the car turned out not to be stolen, it had expired plates and was not registered. The suspect was driving on suspension, he was in possession of drug paraphernalia and possessed alcohol as a minor. He also was charged with several vehicle code violations.

I left the scene and arrived at my boating course just in time to start the program. All in a day's work!–*WCO Craig A. Garman, Cumberland County.*

That's no polar bear–it's a walrus

In many northern cities that experience harsh winters, there are groups of hardy men and women who take an icy dip in frigid waters as an annual event. While on patrol in Cambria County in early December, I came upon a couple who must have been "training" for just such an event. When we arrived at the scene, one swimmer was completely naked and the other wasn't far behind. I turned to my deputy and said, "They must be polar bears," to which he replied, "That's no bear–it's a walrus." We had to cut their swim short and they were cited for disorderly conduct.–*WCO Christopher D. McDevitt, Cambria County.*

Caller caged, snake released

Late one summer afternoon I received a radio call from Regional Manager Bill Hartle requesting that I call him. I did so and was informed that he had been called by a young lady who was trapped in a house with a snake. I was informed that the caller seemed to be a young teenager and had no one to assist her with this situation. I replied that I would respond to the address but it was on the far end of my district, so it would take about 45 minutes to get there. Manager Hartle told me that he would call the young lady and tell her I was responding.

I was greeted at the door by the young lady and directed into the living room where I was shown an old-style sewing machine cabinet, the type in which the sewing machine folds down under the lid. With my flashlight I could look into the front of the cabinet, but saw no snake. I then lifted the lid carefully and looked into the cabinet. Again, no snake. I then lifted the sewing machine and was greeted by a 4 $^{1}/_{2}$- to 5-foot black rat snake that had twisted around everything inside the cabinet. I gently grabbed the snake by the neck and began unwinding it from its hiding spot. As I freed it from the sewing machine, the snake shot a large stream of musk all over the wall, the carpet and my pant leg. I sacked the snake and explained to the young lady how to use white vinegar to clean up the mess and kill the smell. I then left the residence and notified county control that I had completed my assignment.

The dispatcher at county control asked if I could give them a phone call from the residence, and I replied that I would. I knocked on the door and requested to use the phone. Upon reaching the dispatcher, I was asked, "Is she still there?" I replied that she was. I was then asked if she could hear the conversation I was having. I responded that she could not. The dispatcher then said, "Listen, she has four warrants out for her arrest and the constable heard you calling us on the radio and is on his way to your location. Would you assist him with the arrest? He has informed us that she knows his car and will flee when he arrives." I told them that I would assist. I thanked the lady for the use of the phone and left the residence. The constable arrived and the young lady was arrested, placed in handcuffs and transported to the Adams County Prison. In this case, the caller was caged and the snake was released.–*WCO David R. Keller, Adams\Western York Counties.*

Predator one day, prey the next

This past summer, Lavelle Fish & Game stocked trout from its co-op nursery in Bear Creek at the Schuylkill County Fairgrounds for the Schuylkill County Conservation Camp sponsored by the Schuylkill County Sportsmen Association and the Schuylkill County Conservation District. Most of these fish were in the 12- to 16-inch range. The campers ages 12 to 15 would fish when they had a break from their many activities.

During one break, I was walking over the bridge in the fairground and saw what I thought to be a nice brown trout on a rope stringer. As I got closer, I realized that the stringer was

Notes from the Streams

a large northern water snake trying to swallow a 12-inch brown trout. About 10 feet away were two girls fishing. I told them about the snake 10 feet away. They said they knew that it was there, but they also knew that more and bigger trout were under the bridge. We gathered campers and most of the staff on the bridge to watch the snake with his meal. He was having a hard time with the fish. The last we saw him, he had the head swallowed and was working the rest in. It then went under some rocks along the stream. The campers saw firsthand that they were not the only ones looking for a meal from our waterways.

Later in the summer, I talked to a fishermen who had fished that same section of Bear Creek and caught a 15-inch brown trout. In the fish's stomach was a small water snake that the fish had eaten. What is a predator one day can be prey the next.–*WCO Gary l. Slutter, Schuylkill County.*

Techniques for underwater capture

Shortly after arriving in Bedford County, I was contacted by the Pennsylvania State Police to perform an electrofishing demonstration on an unnamed tributary to Shawnee Creek. The demonstration was for their "Camp Cadet" program, which is held every year at Camp Living Waters. I obtained electrofishing equipment from the Reynoldsdale hatchery, and DWCO Brad Criswell requested to help with the program since he had assisted with this program in the past.

On arriving at Camp Living Waters, Brad and I prepared the equipment. We were presented with some 70 boys and girls who were in a parade-type formation and answering "yes sir - no sir" to commands barked by some of the troopers. Along with other programs, speakers and activities, discipline and respect are taught during this week-long program. After introductions and a brief description of what the electrofishing demonstration would accomplish, Brad and I headed downstream to begin. During some small talk walking downstream, I asked Brad if anyone had ever fallen in during this program. His reply was reassuring: "Not in the 15 or 20 years I have been assisting with this program."

Entering the stream, we headed upstream toward the group. The boys and girls were watching eagerly to see fish that would float to the top and be captured in my net. Approaching the small bridge where most of the students were gathered, we had captured only a few small panfish, suckers and minnows. Disappointed with this, I made the remark to Brad that some deeper water was located under the bridge and we should see some bigger fish in this section. A quick flash caught my eye and I realized it was a brown trout attempting to elude the net. Not wanting to lose this opportunity to show the students a fair-sized wild brown trout, I made a quick and off-balance swipe with the net. I then lost my footing and fell into the deepest part of the pool.

It would not have been so bad if only my pants hadn't gotten wet, but after the thrashing around and my futile attempts to keep my balance, the only thing visible to the students was my head above water. And yes, I was in full uniform. Luckily, Brad had lifted the electrofishing probes out of the water. After a few awkward seconds, a forced smile came to my face, which seemed to relieve some of the tension, and the students all started to giggle and talk among themselves.

At the end of the demonstration, Brad and I answered a variety of questions from the cadets. Brad and I will remember for a long time one question directed to me. One girl asked if I were attempting to try some kind of new underwater capture technique when I fell in. This question brought a loud burst of laughter from the cadets, troopers and even Brad and me. One trooper also said that he had just shut the camcorder off or he would have "had" me for the rest of my career. Maybe next year I will ask a DWCO if he could assist Brad with this program.–*WCO Terrance L. Kane, Bedford/Western Fulton Counties.*

Thank you

Having only about 80 WCOs in the state, we rely on help from other agencies as well as information from citizens who observe violations. When information is received, WCOs respond to serious violations immediately. More often than not, these calls come in when you have already promised your spouse that you will be home on time or that you will attend a social function. I would like to dedicate this stream note to all the spouses, especially my wife, Susan, who continue to understand and be supportive of what we do. Thank you!–*WCO Clyde N. Warner Jr., Southern Lake Wallenpaupack.*

Walking around the house

Fisheries Biologist Aide Chris Graf and I were pulling trap nets this past spring on a state park in southeast Pennsylvania (lake name not mentioned to protect individual's privacy). We were soon motioned to shore by a female landowner whose home bordered the park property and was clearly visible from the lake. She began by asking if it was legal to operate a boat on the lake after dark because she was seeing boat lights in the cove on hot summer evenings. I informed her that it indeed was legal to operate a boat after dark on this lake, as long as the boats were displaying the proper running lights and abiding by other regulations. Chris and I should have known better than to ask what was at the root of her concerns because her response was more than we anticipated. She was worried that the boaters could see into her home because, as she put it, "I like to walk around the house in the nude and I don't have any curtains on my second-floor windows." To date, waterways conservation officers have not noticed an increase in boat traffic in that area of the lake.–*Dave Miko Area 6 Fisheries Biologist.*

Anglers Currents

photo-John W. McGonigle

The nation's first Governor's Youth Sportsman's Advisory Council held its inaugural meeting last October at Fort Hunter in Harrisburg. Jim Brett, the Goveror's Sportsman's Advisor, welcomed the teens who had recently been appointed by Governor Tom Ridge. The meeting was chaired by Charlotte (Chotty) Sprenkle, a member of the Governor's Sportsman's Advisory Council and coordinator for the Youth Council. The youngsters heard presentations from representatives of the Fish & Boat Commission, the Game Commission and the Department of Conservation and Natural Resources. Fish Commissioner Enoch S. ("Inky") Moore Jr. read a proclamation from Governor Ridge, marking October 25, 1999, as Pennsylvania Youth In The Outdoors Day. The meeting included (seated, l to r) Andy Mazzanti, Commissioner Enoch S. "Inky" Moore Jr., Chotty Sprenkle, Michelle Richards, Jumanne Kikuali, (standing, l to r) Theresa Alberici, Kyle Russel, Brett Bowser, Casey Welch, Jason Wagner, Carl Richardson, Zachary Brentzal, Shawn Pierson, Colleen Boland, Mike Moratelli, Liz Tully, Jim Brett, Chuck Reese and Joe Lech.

Little Shamokin Creek Anglers' Access Acquistion Completed

State Representative Merle Phillips joined officials from the Fish & Boat Commission, Rockefeller Township and Congressman Tim Holden's office along Little Shamokin Creek last November to complete the Commission acquisition of the Little Shamokin Creek Anglers' Access. The $^{1}/_{4}$-acre parcel contained a residential dwelling heavily damaged by flooding in January 1996. The owners applied for a federal buyout of their property under a Federal Emergency Management Agency (FEMA) disaster assistance program. The buyout required that a government entity or a non-profit group take and hold title to the property and that the property be restricted to recreational/open space use with no structures. The property, cleared of debris, was acquired by FEMA, and with the assistance of State Representative Phillips it was conveyed at no cost to Rockefeller Township. The township, in turn, transferred the property to the Commission for the Little Shamokin Creek Anglers' Access.

The Commission will use the property to provide parking and shoreline access for anglers along Little Shamokin Creek, a popular trout-stocked water. The site is open now for public use. The Commission plans to install a gravel parking lot and official signage.

photo-Dan Tredinnick

L to R: Representative Merle Phillips, Executive Director Peter A. Colangelo, Bill Hanley (Congressman Holden's office), WCOs Steve Boughter and Mark Pisko, Supervisors Colin Clayberger and George Richie.

Mountain Laurel Chapter TU Recognized

The Johnstown-based Mountain Laurel Chapter of Trout Unlimited (MLTU) recently received both national and state recognition for its long-time water quality improvement projects in southwestern Pennsylvania. Len Lichvar (far left), MLTU's Stream Improvement Chairman, was recognized as the outstanding TU member in Pennsylvania in 1999. Randy Buchanan (2nd from left), President of MLTU, accepts the National Silver Trout Award, Pennsylvania Best Chapter Award and Outstanding Chapter Project Award. John Kennedy (2nd from right), southwest Vice President of PA Trout, and Ed Bellis, President of PA Trout, made the presentations.

WCO Receives BUI "Top Gun" Award

The Pennsylvania Driving Under the Influence (DUI) Association recently recognized Commission WCO Alan D. Robinson with its coveted "Top Gun Award" for his outstanding apprehension and prosecution of alcohol/controlled-substance-impaired boat operators. WCO Robinson pursued eight BUI (boating under the influence) cases in 1999 while patrolling Raystown Lake in Huntingdon County. In addition to a recognition plaque, the DUI Association presented Robinson with a new PBT (portable breath testing device) for his continued use on Commonwealth waters. BUI enforcement continues to be a strong focus of the Fish & Boat Commission Bureau of Law Enforcement's efforts to save lives on Pennsylvania waterways.

photo-Guy Bowersox

WCO Alan D. Robinson (right) received the PA DUI "Top Gun Award" from PA DUI Association Executive Director Stephen Erni. Robinson is the WCO in Mifflin and northern Huntingdon counties.

The Pennsylvania DUI Association is dedicated to reducing alcohol/controlled substance accidents and deaths by impaired operators. Its membership is comprised of hundreds of representatives from state and local law enforcement agencies, state and county prosecutors, probation and parole departments, public and private rehabilitation centers, PennDOT, MADD, SADD, PA Department of Education and other public, corporate and private individuals and organizations who share the same goals.

WCO Robinson was presented the award by PA DUI Association Executive Director Stephen Erni last October at the Harrisburg Hilton during the association's annual conference. WCO Robinson serves as the Commission WCO in Mifflin and northern Huntingdon counties. He's been a WCO since 1988.

Fishin' from the Kitchen

Poached Rainbow Trout

by Wayne Phillips

Poaching rainbow trout brings out their natural flavors and allows you to serve them in many different ways.

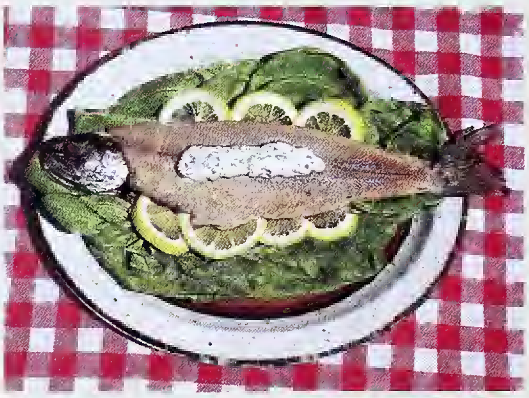


photo-Wayne Phillips

Ingredients for four servings

☐ 1 large rainbow trout or 4 pan-sized trout.
☐ 1/4 to 1 cup each chopped onion, carrot and celery.
☐ 2 lemons, thinly sliced.
☐ 1 to 2 cups liquid–white wine, fish stock, water, or 3/4 wine and 1/4 water.
☐ 2 sprigs fresh thyme, dill or tarragon.
☐ 2 Tbsp. olive oil.
☐ Salt and pepper to taste.

Procedure

Remove the innards and gills from the trout. Wash and pat dry. Heat the olive oil in a fish poacher or roasting pan. Sauté the vegetables in oil for 5 minutes to release their flavors. Add liquid and bring to a slow simmer. Season inside of trout with salt and pepper. Place the trout on a poaching rack and add some vegetables and lemon slices to the cavity. Place lemon slices on top of the trout and add the remainder to the vegetables in the bottom of the poacher. Place the trout in the poacher and cover. Poach until fish is opaque. Cooking takes about 10 to 15 minutes for every inch of trout thickness.

Serve

Remove the trout from the poacher and carefully transfer to a large plate. While the fish is still hot, remove the skin from one side. Remove the vegetables and lemon slices. Place on a platter and garnish with fresh lemon slices. The flavors are delicate, so serve with steamed asparagus or sugar snap-pea pods. Rice flavored with a bit of lemon is perfect for a starch. A simple mayonnaise sauce is terrific with poached rainbow trout. Mix either fresh chopped dill, tarragon or chives with lemon juice and mayonnaise. Thin with white wine if it is too thick.

Hints

Fish poachers are inexpensive and readily available. You can also use a roasting pan into which you can fit a cookie cooling rack. Place the rack on top of the vegetables, place the trout on the rack and cover with foil before poaching. Removing the trout's skin is simple if done while the trout is hot.

Retirements for Long-Time Law Enforcement Personnel

The beginning of the year 2000 marked the end of service for five long-time Commission Waterways Conservation Officers (WCOs) and a support staffer.

Among the retirees is Northcentral Region Manager Paul Swanson, who retired in January after 32 1/2 years of service.

WCO Edward Brown ended his tenure with the Commission in January after 31 1/2 years of service.

WCO Gerald Greiner also retired in January after more than 31 years on the job.

WCO Walter Rosser stepped down in January after 30 years service.

WCO Barry Mechling called it quits in January after 25 years service.

Also bringing a close to her career with the Commission's Bureau of Law Enforcement was clerk-typist Leida Lamas.

The mission of the Pennsylvania Fish & Boat Commission is to provide fishing and boating opportunities through the protection and management of aquatic resources.

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PFBC World Wide Web Site:
www.fish.state.pa.us

Angler's Notebook *by Jon Farley*

Often the metal gas can in your boat vibrates against the hull when motoring to and from your favorite fishing hole. This annoying phenomenon can be quickly remedied with a short piece of garden hose. Measure a length of discarded garden hose to fit the length of your gas tank's bottom rim. Slit open the hose its entire length and slip it over the lip around the base of the can.

Worms are among the best baits for early season trout in lakes. A good way to fish one under a bobber is to hook it several times and slide it onto the shank, leaving only a short section dangling off the hook. This leads to increased hookups by eliminating more short strikes.

With the opening day of trout season quickly approaching, most Pennsylvania anglers are eager to get out on their favorite waterways. However, many anglers fail to realize that catch-and-release fishing is available on many trout streams before the opener. A list of these is located in the *2000 Summary of Fishing Regulations and Laws*.

Catfishing tip: During periods of high water in the spring, downed trees and submerged brush piles in rivers are good places. These areas provide cover and attract baitfish, which in turn draws in hungry flatheads and channel cats.

Many fly fishermen have problems detecting strikes because they can't see their dry flies on the water's surface. One way to solve this problem is to attach a tiny piece of strike indicator about a foot above the fly. The brightly colored indicator is much easier to see and if trimmed small enough, it doesn't hinder casting or spook fish.

If you have a small scale and want to weigh a fish before releasing it, do not hang it by the lip or gill plate. Instead, put the fish in a mesh bag and then hang the bag from the scale. Be sure to wet the bag first because a dry bag can remove a fish's protective coating.

photo-Russ Gettig

Cast & Caught

Clark Mount, age 9, holds the 24-inch brown trout he fooled in a Berks County trout stream. The fish weighed 4 pounds, 2 ounces.

William B. Lawton, Summerhill, fished live bait to nail this 34-pound striper. The action took place last July at Raystown Lake. Lawton wrestled the fish in on 12-pound-test line.

Tommy Seas, age 14, shows the 27-inch, 10 $^{1}/_{2}$-pound channel catfish he caught last September in Lake Wallenpaupack.

Steven Frey, age 9, holds the 17-inch crappie he caught on a large shiner at Lake Arthur, Moraine State Park, last summer. He was fishing with his grandfather (in photo), Clyde L. Wyant III, and his great-grandfather.

Sherri Hines, McKeesport, holds the 12 $^{1}/_{2}$-pound freshwater drum that she caught in the Monongahela River. The fish was 25 inches long. Sherri received her first Senior Angler Award for this fish!

Molly Hoover, age 10, earned a Catch and Release Award for this 31 $^{1}/_{2}$-inch, 23-pound carp, held by her grandfather and fishing mentor, John Witmer. She caught the fish in the Susquehanna River, about a mile north of Millersburg. The carp took a worm.

Last spring, Sharon Mulcahey, Oil City, caught her first trout in the Little Shenango River, Mercer County.

Contest Photo Tips

by Art Michaels

Be sure to check out the details of the Commission's Photography Contest on page 63! In the meantime, use these ideas to take some great fish photos this season!

- Backlighted shots can be great! Backlighting, when sunlight comes from behind the subject, can make tree leaves and fish fins appear to glow. To further enhance a backlighted shot, try using fill flash to lighten deep shadows. Your camera and flash unit's instruction manual may explain how to use fill flash.

- To increase the dramatic effect of your photograph, hold the camera lens parallel to or slightly below the subject (fish). In most cases, you can accomplish this by kneeling before you take the picture.
- Fill the frame. Many otherwise great "hero" shots are ruined because the subject is simply too far from the camera. A good rule of thumb is that when you think you're close enough, take another step closer and then take the picture.
- Watch out for backgrounds that can ruin a photograph. "Busy" backgrounds lessen a photograph's effect by focusing the viewer's attention more on the background than on the subject. Beware of fishing rods, telephone poles, antennas, tree trunks and branches that can appear to be growing out of the subject's head!
- If you take a picture with the sun behind you, especially when the sun is low in the sky, remember to stand so that your own shadow doesn't appear in the picture.

These photo tips come from the author's award-winning seminar, Basic Field Photography. *Watch the next issue for more photo tips!*

Year 2000 PFBC Photography Contest

PICTURE THIS! Your photograph in *Pennsylvania Angler & Boater* Magazine, in Commission publications, on the Commission's web site, and on Commission exhibits!

The Year 2000 Pennsylvania Fish & Boat Commission Photography Contest is intended to foster a greater appreciation for Pennsylvania's fishing and boating, and aquatic resources.

Contest winners will be determined by a panel of judges chosen by the PA Fish & Boat Commission. Photographs will be rated on qualities including composition, originality, visual appeal and adherence to contest rules. First-, second- and third-place winners, and honorable mention winners, may be selected in each category.

Contest winners and honorable mention winners will receive a certificate. Winners will also receive a large-size (6-inch diameter) 10th Anniversary Trout Stamp patch. Honorable Mention winners will receive a year 2000 Trout Stamp patch. Winning entries and honorable mentions may appear in a contest feature article in a future issue of *Pennsylvania Angler & Boater*. All entries may also be used elsewhere in the magazine, on the magazine's cover, in Commission publications, on the Commission's web site, and in Commission exhibits.

The contest will run from January 1, 2000, through December 1, 2000. Winners are scheduled to be announced during an awards presentation at the January 2001 Commission meeting.

Rules

- The contest is open to amateur photographers (anyone who makes less than half one's annual income from taking and/or selling photographs).
- Entries must be original works taken in Pennsylvania, and they must have been taken by the person entering the contest.
- Entries must also show adherence to Pennsylvania fishing and boating laws and regulations.
- In photographs all boaters, and anglers in boats, must be wearing properly fitted, buttoned and zipped life jackets.
- Entrants may submit only mounted 35mm color slides, color prints in sizes 3 1/2"x5", 4"x6", 5"x7", or 8"x10", or unmounted medium-format and large-format transparencies.
- All submissions must be in color–no black-and-white photos.
- All submissions must be original–no duplicate slides or electronic submissions.
- No mounted, over-matted, framed or glassed prints will be accepted.
- Retouched or electronically manipulated entries are not allowed.
- Please do not send negatives.
- Each photo must include the entrant's name, address, phone number, location of the photograph, and category, in addition to a fully completed official entry form on this page for each category entered.
- Participants are limited to a total of two entries per category. Multiple submissions are allowed, as long as entrants submit no more than two items per category.
- The Pennsylvania Fish & Boat Commission shall have the right to use all submissions for publishing, illustration, World Wide Web display, advertising, trade, exhibitry and promotion, or any other use in any medium for any purpose without compensation.

Entrants who want their materials returned must include a self-addressed, stamped envelope with the right amount of postage and appropriate packaging to safeguard materials. Submissions that do not include return envelopes and postage will not be returned.

Photo Contest Entry Form

www.fish.state.pa.us

Complete this form with each entry and mail to: PFBC Photo Contest, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000. The deadline for the Commission's receiving entries is December 1, 2000.

Entrant's Name: ______________________

Address: ______________________

City: ______________ State: ________ Zip: ________

Phone: ______________________

E-mail (if available): ______________________

Date: ______________________

Signature: ______________________

Categories

☐ 1. Seasonal Fishing and/or Boating
☐ 2. Family Fishing and/or Boating
☐ 3. Reptiles and Amphibians (Animal closeups, or photos with the animals as the primary subject)
☐ 4. Invertebrates (worms, aquatic insects, crustaceans, mussels)
☐ 5. Fishing & Boating Resources (primarily waterway scenic emphasis)

Office use only - Leave blank
Category:Entry #:

This form may be photocopied.

Commission Staff Awards

The Commission conferred staff awards at its January 2000 meeting.

Commission President Donald K. Anderson (left) presented Executive Director Peter A. Colangelo with a plaque for special recognition and five years of dedicated, and continuing, service to the citizens of Pennsylvania.

Commission President Donald K. Anderson conferred two awards for recognition and commendation to Deputy Executive Director/Chief Counsel Dennis T. Guise (above) and Aquatic Resources Planning Coordinator Tom Ford (below). Guise was recognized for "leadership, vision and effort in the development of the Commission Internet presence and web page." Ford was recognized for "untiring work in pursuing a partnership with Solebury Township to provide public use of the Ingham Spring property."

Lifesaving awards went to 11 waterways conservation officers (WCOs), deputy waterways conservation officers (DWCOs), an assistant regional supervisor, and Pennsylvania State Police personnel. The awards were given for group and individual actions in 1999 that saved lives. Presenting the awards were Commission Executive Director Peter A. Colangelo (far left), Commission President Donald K. Anderson (far right) and Bureau of Law Enforcement Director Tom Kamerzel (second from right). Attending the presentation was PA State Police Lieutenant Robert Evanchick (third from left). Award recipients included (from left) WCO Ron Evancho, WCO Greg Jacobs, PA State Police Corporal Daniel Martin, DWCO Michael Symbala, DWCO Michael Hardy, DWCO Randy Contray, WCO Leo George, WCO Ray Borkoski, Southwest Assistant Regional Supervisor Jay Redman, DWCO Ty Stewart and DWCO Michael Hurst.

Commission President Donald K. Anderson (left, both photos) conferred awards to staff for contributions to PA&B. Division of Fisheries Management Chief Richard A. Snyder (left photo) won the long feature article award for "Fish Salvage at Tamarack Lake," in the November/December 1999 issue. Southwest Assistant Regional Supervisor Jay Redman won the Notes from the Streams award for "A True Romantic," in the November/December 1999 issue. Not pictured was award winner Dudley Parr, former aquatic resource program specialist, for his short article "Fishing Traditions," in the May/June 1999 issue.

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Bluegills *page 29*

Bass and Trout *page 41*

Take a Kid Fishing *page 44*

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RESOURCE FIRST

Giving of Yourself

Leonard A. Green, former member of the Pennsylvania Fish & Boat Commission, died on March 28, 2000, in his hometown of Butler, Pennsylvania. He was 70 years old.

Len had a remarkable life, and he showed extraordinary dedication to the cause of conservation. One reads the brief summary of his life with a sense of wonder: How did he do it all? Where did he find the time? How did Lenny Green and those like him give so much of themselves to causes they love?

Lenny Green didn't just support his church: He founded a foundation to do so. He didn't just help at youth conservation camps: He started them and watched them grow. He didn't just hunt and fish: He became a leader in conservation and sportsmen's groups at the local, state and even the national level. He didn't just recite the Conservation Pledge: He lived it. He did all this before he retired from an important position in private industry. After his retirement, he seemed to get even busier.

Lenny Green was as a member of the Fish Commission when it adopted the "Resource First" philosophy. His contributions, which still guide us today, were truly exceptional. But he did even more. He served on the Citizens Advisory Committee to the Department of Environmental Resources and as a member of the Pennsylvania Environmental Quality Board. He simultaneously served with distinction on not one, but three state boards and commissions with jurisdiction over the waters and environmental quality of Pennsylvania. And all three positions were, of course, unpaid volunteer positions.

Lenny Green's life shows how a dedicated individual can take "giving of oneself" to a new level of commitment. What's most remarkable, however, is how many others follow in the footsteps of Len Green. Anglers, boaters and conservationists seem to make a career of giving of themselves. It comes with the territory.

Take a look at our current board of commissioners. They are all busy in their official (and unpaid) roles as members of the Commission and in following their private pursuits. But they still take time to volunteer in many other roles in conservation and sportsmen's groups, cooperative nurseries, watershed restoration and protection projects, education programs, conservation camps, projects for persons with disabilities and other volunteer endeavors. The same goes for our Boating Advisory Board members, who volunteer their time to teach boating courses, participate in programs and help boaters. And the phenomenon of "giving of oneself" doesn't stop with our Commissioners and Boating Advisory Board members. Fish & Boat Commission employees across Pennsylvania give of their personal time to serve in conservation groups, professional societies and associations, sportsmen's clubs and other such organizations.

The success of the Fish & Boat Commission in providing fishing and boating opportunities depends in large measure on dedicated volunteers and partnerships with individuals and groups. People who "give of themselves" touch almost every aspect of the Commission's programs. We depend on deputy waterways conservation officers, cooperative nurseries, volunteers for habitat improvement projects, volunteer boating safety instructors, and fish stocking volunteers, to name just a few.

The volunteer spirit that means so much to the anglers and boaters of Pennsylvania was epitomized by two individuals who passed away in the last few weeks. **Bill Mathews** of Slippery Rock (Butler County) devoted much of his life to serving as a deputy waterways conservation officer and leader of sportsmen's organizations. **Tom Eckert** of Red Lion (York County) was one of the Commission's top boating safety instructors, always willing to give of himself to promote safety on Pennsylvania's waterways.

In an era where "lack of time" is the number one reason people give for not participating in fishing, it is heartening to see so many who devote countless hours to helping others and helping our natural resources. It's obvious that time is the most precious commodity that any individual can give, and it is a constant source of wonder and admiration that so many of those associated with the Fish & Boat Commission give so much time to the cause of conservation and wise, safe outdoor recreation.

When I think of Len Green and his lifetime of giving of himself, there is one thing I wish we had a chance to say to Len before he passed away so suddenly. I wish we had the chance simply to say, **"Thanks"!**

Peter A. Colangelo
Executive Director
Pennsylvania Fish & Boat Commission

A Message from Pennsylvania's Physician General

April 2000

My fellow Pennsylvanians,

Last summer, you may have heard about the West Nile virus that people in New York City contracted from being bitten by certain mosquitoes. This virus can cause encephalitis, which is an infection of the brain.

The virus is spread primarily by the Northern house mosquito (*Culex pipiens*) after it feeds on infected birds and then bites people or other animals. It is not known to spread by person-to-person contact, and there is no evidence that people get the disease from handling infected animals.

West Nile virus is commonly found in Africa, West Asia, the Middle East and Europe. Although this virus has not been found in Pennsylvania, there is a chance that it will spread into the state this summer.

Because of this potential risk, several state agencies, local governments and health professionals are implementing a plan to find and control the kind of mosquitoes known to carry the virus. We will test animal populations that may act as a host for the virus and monitor public health to provide early warning of virus infections.

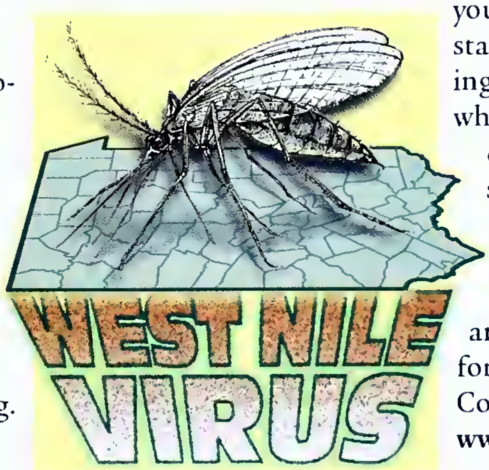
While we are taking aggressive steps to prevent an outbreak and deal with the virus if it is found here, there are some easy things that you can do to prevent mosquitoes from breeding. By working together, we can minimize Pennsylvanian's risk as we enjoy the outdoors this summer.

Sincerely,
Dr. Robert Muscalus, *Physician General of Pennsylvania*

Tips for Pennsylvania's Anglers and Boaters

The message from our Physician General contains important information for anglers and boaters. Pennsylvania is ready to deal with the West Nile virus if it is found here, and Pennsylvania anglers and boaters can take steps to minimize mosquitoes.

The Commonwealth has undertaken an active surveillance program to identify mosquitoes, crows and other animals that may be infected by this virus. In addition, state and local governments are preparing to implement abatement programs for mosquito larvae and adult mosquitoes. The state has provided the funding and made the necessary preparations to deal with any possible occurrence of West Nile virus in Pennsylvania.



Pennsylvania anglers and boaters participate in safe, healthful outdoor recreation. Anglers and boaters can take positive steps to reduce mosquito breeding. The species of mosquito that may spread West Nile virus is known as a container breeder, which means it can reproduce in relatively small open containers of standing water. You can take steps to reduce the number of mosquitoes around your home, camp or boat by reducing the amount of standing water in cans, pots and other containers. The used tire is the most important domestic mosquito producer in this country, and you should pay special attention to any discarded tires around your home, camp or boat. Make sure you clear standing water from other locations, including covers on your boats, and clean gutters where standing water can accumulate. As outdoor enthusiasts, anglers and boaters should continue to take the steps they're familiar with to minimize insect bites.

Pennsylvania anglers and boaters can continue to enjoy the wonders of fishing and boating in Pennsylvania. For more information about West Nile virus, go to the Commonwealth's website at **www.westnile.state.pa.us** or call **877-PA-HEALTH.**

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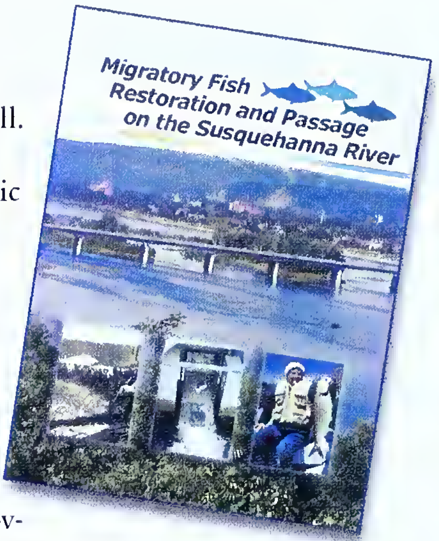
Casting Around

Migratory Fish Restoration, Lehigh River Water Trail

Why does the entire fishing world seem to come alive suddenly in May? Trout and bass fishing improves as waters warm, the shad run peaks, panfish action increases, walleye season begins, and pike and pickerel fishing comes on strong. This issue's content reflects this blossoming, as does the front cover, with its main photo, a brown trout, and other photos of an American shad, smallmouth bass and a bluegill.



May is especially invigorating for avid shad anglers. Be sure to read Vic Attardo's insighful piece, "Going to the Mat with Shad," on page 8. In addition, get a copy of the publication *Migratory Fish Restoration and Passage on the Susquehanna River*, which has been expanded, revised and reprinted. This 20-page, full-color publication was originally printed in 1996. The publication covers the legacy and history of American shad in the Susquehanna, the history of restoration efforts, the current restoration approach, descriptions of six migratory fishes, reopening Susquehanna River tributaries and dam removal, the Susquehanna's influence on Chesapeake Bay, and individual action to aid restoration efforts. The publication was a cooperative venture among federal, regional and state agencies, and other groups. Single copies are available for free. Send requests to: Fulfillment Section, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000.

This issue's Conserve 2000 article, by Carl Richardson, is called, "Migratory Fish Restoration." The article provides a historical perspective and focuses on vital regional and global aspects of restoration. Conserve 2000 donations provided by you will help the Commission restore migratory species. Migratory fish restoration is aimed at reversing the effects of earlier human activity and regaining our natural, cultural and economic legacy. Donations to Conserve 2000 help the Commission provide fishing and boating opportunities by providing resources for important initiatives like migratory fisheries restoration.

In this issue's water trail article, author Sue Ann Alleger says that the Lehigh River, one of the Commonwealth's major shad restoration waters, is blessed with fine scenery, productive fishing and other attractions. She explains these waterway features along the Lehigh's 72-mile water trail course. That article starts on page 32.

–Art Michaels, Editor.

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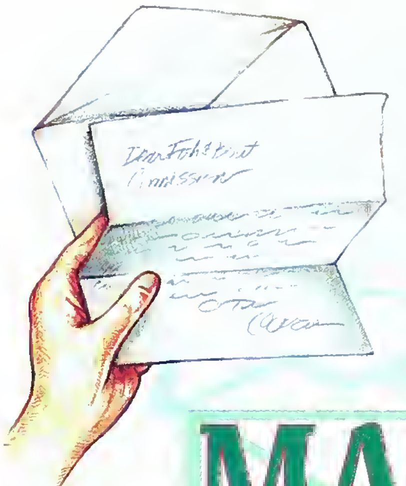
About the cover

This issue's front-cover brown trout was photographed by Barry & Cathy Beck.



MAIL

Licenses via the Internet

I was just reading about Governor Ridge's budget proposal of $500,000 to be split by the Game Commission and Fish & Boat Commission to purchase licenses over the Internet. I don't know where the funds are coming from, but I'm sure it's from our pockets (because that's where all the money comes from). Unless this plan will generate more money for the Commission, and I don't see how that is possible, why waste the money? You're not going to lose one hunter, angler or boater because they have to get in their cars and drive to the store to buy a license. All I've heard lately is how you don't have enough funds coming in to take care of business, so why waste $500,000 on something so stupid. I don't know where this money is coming from–if it's money the commissions have or money the state is giving to the commissions, but I say find something better to do with it.–*via email, name withheld by request.*

Like it or not, the business of selling fishing licenses is just that–a business. We believe that just as the rest of the world of commerce turns to alternate means of product delivery, so must we to satisfy the expectations of our customers.

You're probably right that in the near term, we won't sell many more licenses by making them available on the World Wide Web. But we believe we will initially see some modest increase. More importantly, increasing numbers of people will soon not only take advantage of this method, but will expect and demand it.

The reality is that in the way the world is moving, we can't avoid doing business this way. We can't ignore this trend. Our only choice is whether to be a leader or a follower. We choose to lead.–*Wasyl Polischuk, Director, Bureau of Administration.*

Credit card question

Why don't you take subscriptions online using credit cards? Or did I miss something on that page of your web site?–*Jeffrey Jacobs, via email.*

The Fish & Boat Commission, in partnership with the Game Commission, is currently engaged in evaluating proposals to offer many of our services over the Internet. This e-commerce initiative will enable our customers to obtain licenses, stamps, magazine subscriptions, prints, patches, publications, products and even boat registration renewals over the Internet using a credit card. We hope to have this up and running sometime during the summer of 2000.–*Wasyl Polischuk, Director, Bureau of Administration.*

Proper way to release trout

My father was editor of *Pennsylvania Angler* for many years under Executive Director C. French. He instilled in me the proper method to release trout without harm. The Fish Commission does condone release of trout carefully because a short item on this subject appears in the 2000 *Summary of Fishing Regulations and Laws.*

I have seen the methods for releasing trout used by many anglers and they leave me horrified. The results of those releases are evident later on the bottom of lakes and streams.

Incidentally, I have watched bass and walleye tournaments on T.V. and the manner of catching, holding and releasing fish is simply deplorable. I'll always question the number of fish that survive.–*James A. Barrett Jr., Camp Hill.*

See page 32 of the 2000 *Summary.* This information also appears in the Commission's pamphlet *Let's Go Trout Fishing in Pennsylvania.* Single copies are free. Contact: Publications Section, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106.–*Ed.*

Identifying baitfish

I would like to know if there are any charts that identify baitfish species. Where can I order them? I would like to know exactly what I am catching in my minnow traps. I live in Clearfield County.–*J.P. Ruot, via email.*

The Commission publishes a fish chart on forage fishes that may help you. We've also just published a new book, called *Pennsylvania Fishes,* which can help you identify pretty much anything you'll see in PA waters. Check the Commission's web site, www.fish.state.pa.us, for a look at the charts in the Publications Section. You'll find an order form there, too. An order form also appears in issues of *PA&B.*–*Ed.*

Carp takeover

My friend has a pond that has been taken over by carp. He wants to shock them and remove them. May he? Should he? Can you rent shocking gear from anyone?–*Emailed question (from one or more people) taken from the "Q&A" area on the Commission's web site: www.fish.state.pa.us.*

An overabundance of carp in a relatively small waterway like the

typical farm pond may eliminate managing for other more popular sport fishes. Most remedies may be costly. They may also involve legal issues, and may be short-lived solutions, depending on the likelihood of carp becoming re-established. Some treatments obviously may be better than others, but even then they may not rid the pond of carp. Carp are very prolific spawners, so it would take only one pair to start things again. These suggestions are based on the assumption that carp are so abundant that the pond is worthless for other fishes and that once eliminated, the carp will not come back naturally.

Probably the most reliable and least expensive way to eliminate carp would be to drain the pond. I believe if the pond is less than one acre, drawdown permits from the Commission and the Department of Environmental Protection (DEP) are not required. Use caution, though, so you don't drain the pond too fast, not only to minimize stream erosion below but also to avoid sloughing off of water-soaked steep banks around the pond. Downstream neighbors may not be too happy with stranded, dead and dying fish, including carp.

The Commission doesn't get involved in private salvage operations, but a local angling club might get involved for stocking a community pond (yes, even with carp). You might want to drain it in late fall, once air temperatures decrease, to minimize the odor problem, which often accompanies not only dead fish but also the muck and decaying aquatic vegetation common in a drained pond. Allowing the pond to stay drained for a while ensures a complete kill, including those fish "hidden" in the mud. If the pond is going to be down for an extended period, I also suggest sowing some inexpensive grass seed around to establish a ground cover to minimize erosion and to reduce the eyesore. Another benefit of draining the pond lies in re-stocking it with the fish appropriate to the type of angling your friend desires. I suggest you keep the new community simple. The smaller the pond, the simpler the mix of species.

One might also use chemical reclamation if draining is not possible. Regardless of the fact your friend owns the pond and even the outlet stream, use of chemicals (aquatic herbicides, algacides and compounds intended to kill fish) requires a permit (free). Remember that the water will flow elsewhere and the permitting process protects downstream users and environments. Chemicals can be quite expensive and are usually not species-selective. In other words, eliminating the carp usually means killing off everything.

Seining/electrofishing, while likely to take a good number of carp, are also likely to miss some fish unless the pond is very small, very shallow, and void of stumps and weeds. I suggest if these techniques are desired, your friend should hire the services of an aquatic consultant. Then the matter of permits and related issues can be handled by people who do this work for a living. Electrofishing gear might be available for rent, but I strongly suggest that amateurs not do it, because electrofishing has a very strong potential for killing people. Electrofishing gear is also an illegal device unless covered by a permit. The fact that even a highly proficient crew is likely to miss some carp might make me think twice before investing money in netting or electrofishing.

One might consider making the best of a bad situation and fishing out the carp. This may rub the pond owner the wrong way, but at least he could enjoy this resource. Angling probably would not result in elimination.

One might even stock predators such as the tiger muskellunge (hybrid cross between a northern pike and muskellunge) or purebred muskellunge to prey on the carp. Even then it would take some time before any effect might be noted, and large carp, too large to be eaten, might still outlive the toothy predators.

I wish I had a surefire and inexpensive suggestion for your friend. Whatever your friend does, should he be successful in eliminating carp, he might want to think about restricting use of live fish as bait to prevent someone from introducing young carp back into the pond.–*Richard A. Snyder, Chief, Fisheries Management Division.*

Fishing guide service

To starting a bass fishing guide service, which permits do I need? Does the Commission offer a "Guide's License"?–*Emailed question (from one or more people) taken from the "Q&A" area on the Commission's web site: www.fish.state.pa.us.*

There is no mandatory commercial fishing guide permit in Pennsylvania, but there are several details you need to consider. Of course, you need a fishing license when you are in the act of fishing. A valid registration is required for your motorboat. If you transport up to six passengers for hire on a federally navigable waterway, you need a special U.S. Coast Guard permit, sometimes referred to as a "six pack license." Beyond these things, all that's needed to make a go of it as a guide are some clients willing to pay for your service.

If you do open a guide service or charterboat business, you may wish to apply for official recognition from the Commission. This step is voluntary, with a $50 annual fee, but it does get your business included on the list of Officially Recognized Charter Boat Operators and Fishing Guides, which the Commission distributes to those anglers who contact our offices looking for guides. Official recognition also lets you field dress your clients' fish.–*Ed.*

Going to the Mat with Shad

by Vic Attardo

Remember the Florida Marlins of the mid-1990s? They rocketed from last place to the World Championship in one year. That's nice to think about, because then there's precedence for this season's shad fishing.

After an utterly abysmal spring in 1999, perhaps there's hope in the new millennium. Then again, after the Marlins won the championship, they bottomed out the following year.

Though water conditions were very good, about the only people who were happy with last season's shad fishing were the few anglers who squeaked out tournament wins with lightweight fish. When a six-pound shad wins the famous Forks of the Delaware Tournament in Easton, you know something's wrong.

For a few years now, the tournament winners have been getting lighter and lighter. Gone are the heady days of the early 1990s when it took an eight-pounder to garner top money. Last spring, even five-pound shad were winning daily prizes. Personally, for the first time in about 10 years, I didn't catch at least a six-pound fish.

Last May, during the season of our discontent, Fish & Boat Commission Fisheries Biologist Dave Miko told me a woeful tale. Each year the biologists are assigned the task of acquiring 30 shad per week for five weeks for the Commission's studies. Normally it takes just a couple of hours one day a week for the shad to be electrofished and netted. But when I talked to Miko, he told me the task had required nearly a full day each week to collect 30 shad.

"There were no large pods of shad," Miko said. "Only two or three fish in a pod and the pods were separated by more than a quarter-mile."

What the biologists discovered equaled the experience of the Delaware's best shad anglers.

But when pondering the future, let's not get too discouraged. I remember 1995 was a rotten year. Then the following year most anglers had a good spring, with another three years of fine fishing after that.

Lessons

When fishing for shad this season, extraordinary care may be needed in setting your anchor and laying your lines. Putting darts and flutterspoons on the money is always important when pursuing shad. But it becomes doubly important when there are fewer fish in the river. Sometimes you have to pin them to the mat.

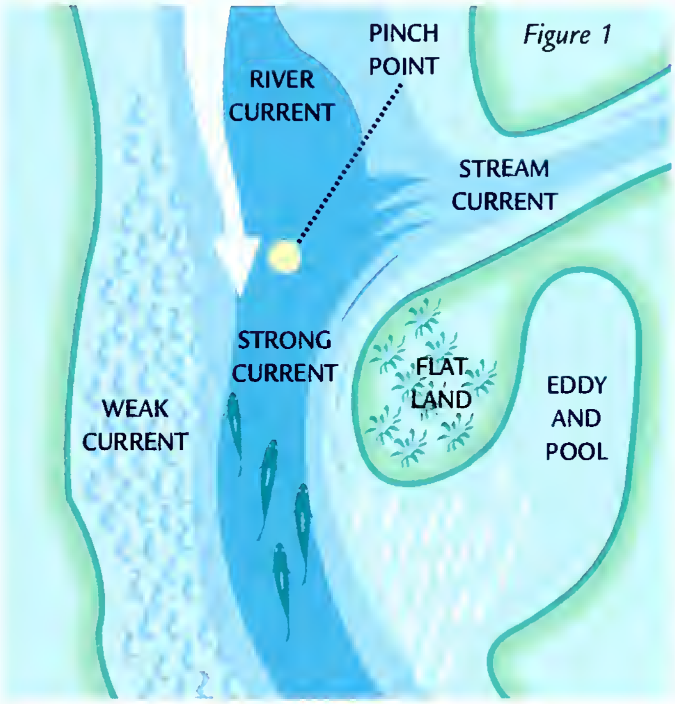


Figure 1

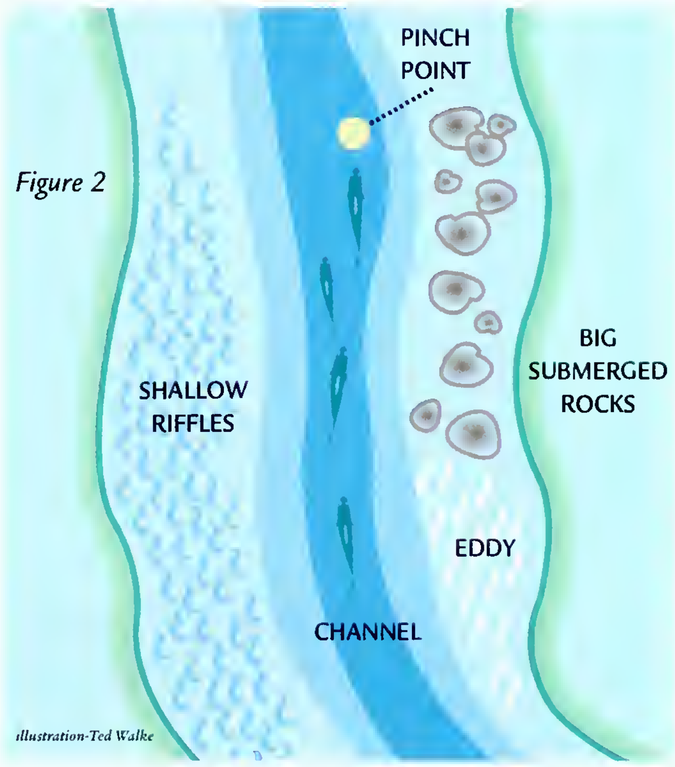


Figure 2

illustration-Ted Walke

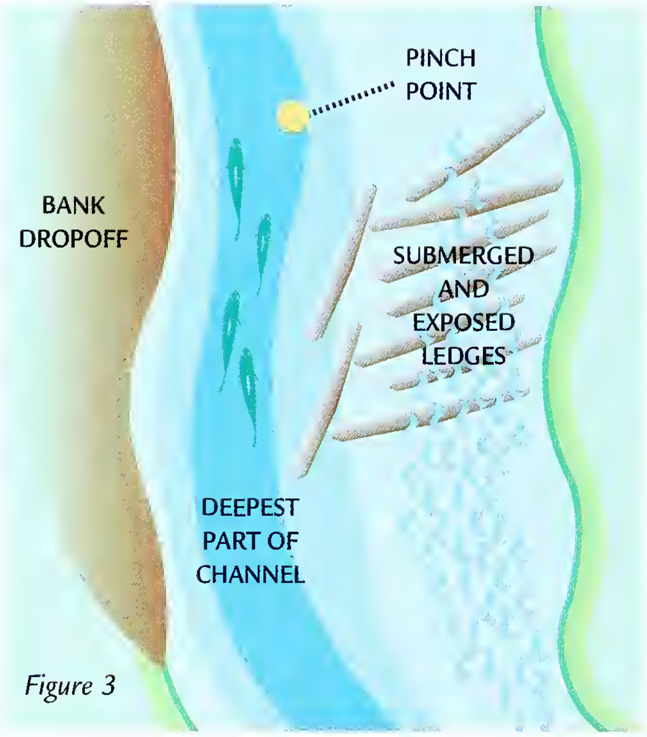


Figure 3

The shad anglers who were even moderately successful last season were often those who got away from the crowds–what little crowds there were–and fished exceptional spots. Since the pods were small and far apart, hardly anyone was catching them across the river's wide field. To get a few shad, you had to narrow the zone. Successful anglers found what are called "pinch points"–places where most shad will run to continue their upstream migration.

A "pinch point" is not a single type of structure. In fact, the term encompasses a wide variety of river formations. A pinch point may be a twist in the channel, a narrowing at the head of a riffle, a collection of large rocks forming a maze, and even a spinning current around a bridge abutment. It can be all these things and more.

Last season, my shad partner Ken Koury and I tried a number of spots early in the season and then ended up sticking to one pinch point like glue. It paid off–at least better than a lot of other strategies.

The site was around Riegelsville where a New Jersey stream entered the Delaware. The flow from the stream created a shallow point out from the main shoreline and a deep eddy behind the point. Along the landed extension, the stream pressed the river in a moderately flowing riffle and narrow channel (see Figure 1). Away from the channel the main body of the river flattened out. We discovered the spot a few years ago and knew the shad had to run the pinch point between the shoal and the flat river. We had great confidence in the site.

Nevertheless, we had to work for our shad. On our best day in early May, Koury, a guest Phil Falato and I landed 14 fish. Last year, on about the same date, we had over 35. Still, the pinch point was the key.

In previous years, Koury and I set up above Easton near the head of a riffle. At this spot the river makes a little jog to the left around some boulders (see Figure 2). The trick is to anchor well above the rocks and let the flutterspoons dance around the obstructions.

Because anchoring in the heavy flow is difficult, it isn't a good spot to lower the downrigger. Frankly, we fear that the anchor might get loose and we'd lose the cannonballs. Our game then is flatlining.

By branding your fishing line with a permanent-ink marker after hooking a shad, you can be fairly accurate in the return placement of the lure. But you won't be completely accurate time after time.

Fishing the boulder field, we'd wait about 15 minutes. Then, if no shad struck the flatlines, we'd lift the spoon back just a yard or two. It was amazing how many times a seemingly minor adjustment resulted in a quick strike. Perhaps before the hit, the lure was off to the side or atop a boulder; with the reset, it fell into the right spot. The lesson is that when we hit the pinch point, we hooked shad.

Fishing with shad magnet Pappy Magaro last year, we smacked seven fish on some very trying pinch points. It was a bright, late-April day with water temperature climbing from 53 degrees in the morning to 55 degrees by mid-afternoon. Unfortunately, the river had risen eight inches as a result of an all-day soaker two days before our outing. With the conditions and the type of year we were having, fishing wasn't easy.

Magaro was working his fireman's hat off to get us shad, but the strikes were few and far between. After a time, Pappy moved to a difficult pinch point below a railroad bridge. We set our downriggers and within a few minutes took a shad. We quickly got another hit and big smiles appeared on our faces. But after the second fish, we lost anchor in the high flow and not for love or shad darts could we reposition ourselves at the right pinch point. Because of this, we didn't get any more fish from that spot.

Shad from shore

Pinch points are an applicable concept for taking shad from shore as well as a boat. Up above the Delaware Water Gap I know a place where the channel runs close to a series of ledges seemingly out in the middle of the river (see Figure 3). Barring any mid-May rains, I can walk to the ledges barely getting my knees wet. Though the rocks are extremely slippery, they offer a casting platform to the channel. There are actually quite a few places like these between the Gap and Port Jervis, and the lesson is applicable throughout.

In years with good shad, I stand on the rocks, cast across the river beyond the other side of the channel, and let my darts transcribe an arc through the bottom of the channel.

"Pinch points" are places where most shad must swim to continue their upstream migration.

Some years I get hits across the whole width of the current, but the majority of strikes come tight to the ledges on the inside wall of the trough.

Last season, I hardly got a hit at this spot as the dart swung in the current. The few that I did get came close to the ledge at the most defined pinch point at the site.

Growing weary of the fruitless casting across the channel, I rigged a 10-foot noodle rod with a $^3/_4$-ounce bell sinker and put a flutterspoon on a dropper about three feet above the weight. The rig cast ugly, but on a 45-degree angle to the bottom, I was able to keep the spoon in place on a tight line. For self-amusement, I'd twitch the limber tip of the noodle rod ever so slightly, not letting any slack develop that might pick up the sinker and take it off station. In effect, I had a mini-downrigger.

In a couple of hours one day I was able to pick up a few shad with this silly looking outfit. Anglers above and below me on the ledges working darts across the width of the channel had little to show for their efforts. If someone had anchored in the same spot, they might have taken these shad. But since the small pods were tightly confined against the ledges, the wide casting sweep went unrewarded. Pinch points.

Tales from the thermometer

Other factors in addition to pinch points helped us during the pitiful 1999 season. One of the most important was water temperature.

When fishing is bad, you don't feel like putting a whole day into the effort. But as shad anglers, we're conditioned to get to the water before dawn and stay until the last light of day. That got awfully weary last season, as it became clear it was not a banner year.

I've drummed it into my head that decent shad angling is not going to begin until the water temperature reaches at least 50 degrees. I'm so confident with that mark that by 52 degrees I start looking for other reasons if I'm not catching fish.

What I learned last year was that 50 degrees is a good starting point. But now I think there's a sort of "shared aggression" between shad that improves the chances of getting a strike.

By the last few days of April, we had water temps in the lower 50s, but often the pods of fish went by without hitting. As the water temp around Easton got in the mid-50s in the first week of May, the shared aggression became more intense and we had a few decent bites. I now believe that the aggressive nature of the fish is more intense when there are larger numbers of fish in a pod.

Last year I stopped going down to the water at first light but instead waited for the sun to push the water temperature up a few degrees, at least into the mid-50s. I talked to fellow anglers and they were not doing well in the morning. But as the river warmed a few degrees during the day, we got a few afternoon flurries. On the other hand, when the sun was on its way down again, the bite stopped. I don't think I had a good evening bite from late April through mid-May.

As a result, I'm beginning to think that good shad fishing is not only a case of water temperature but also a case of monkey-see, monkey-do, "shared aggression," if you will. One striking shad provokes, or interests, another shad into striking. Even with the small numbers of fish, we still had a few doubles in the boat last year. But, unlike the year before, we had no triples.

Turn off the TV

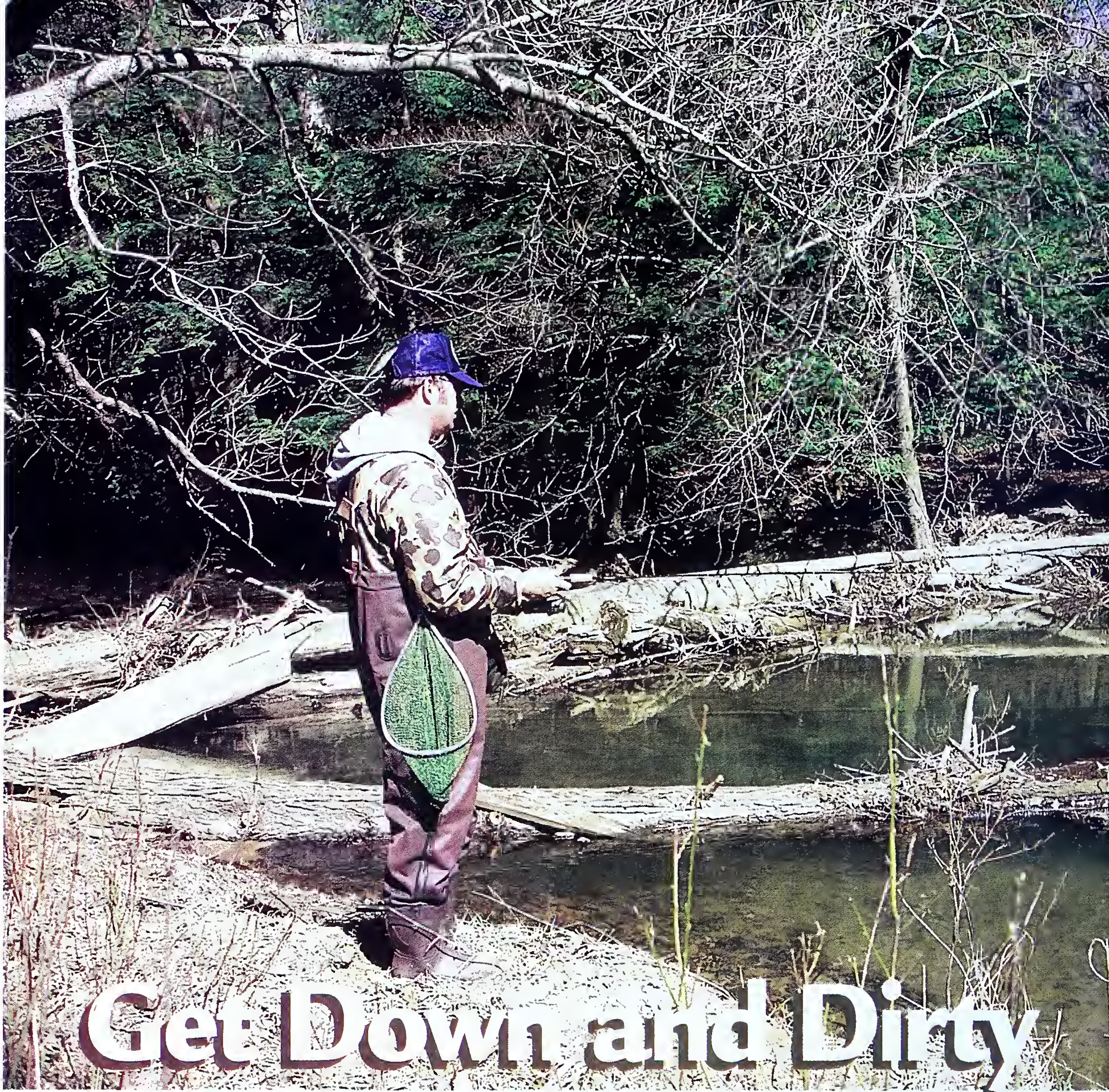
Here's another shocking statement about the 1999 season, and one that may address all those blips you're seeing on your sonar screen. I've long held that most of those dots swimming across the view screen are not American shad. And what the biologist discovered last year proved it.

It so happens that in the Fish & Boat Commission's shad electrofishing, a lot of the fish they caught swimming along weren't shad at all. Miko reported that for every one or two American shad captured from a pod, there were three or four gizzard shad in the school. Also in late April they had large numbers of quillbacks moving with the shad, and at other times, astounding numbers of white suckers. All spring the river was alive with schools of shad-sized fish, but few of them were American shad.

In mid-June I observed biologists from the Philadelphia Academy of Natural Sciences electrofishing the middle Delaware. The number of big gizzard shad and quillbacks was amazing. Ironically, we also found some pockets of male American shads still hanging around the middle river. I don't know what it all means, but I know it's fascinating.

If the Delaware's shad are in a decline, then it is important to release correctly the fish you don't need. Use barbless hooks and when removing the hook, grasp the shad over its back, behind the gills. Don't put your fingers into the gills unless you intend to keep the fish. A bleeding shad is a dead shad.

All fish populations are cyclical. You get good years and bad. I know I've had poor years followed by a bunch of great ones. Let's hope that tendency continues. ☐



Get Down and Dirty for Spring Trout

by Mike Bleech

Learning where trout prefer to lie in wait for food is always important to anglers, but never more important than during spring when trout will not move far from their lies to take a meal. Trout are sluggish in the cold spring snowmelt. Sometimes to arouse their interest you have to drift your bait right under their noses. And when trout are in a fussy mood, it had better be the right bait. **This is the time to get down and dirty.**

In general, spring trout lies are places where trout can avoid the stronger currents. Seldom, though, are these lies in calm water. Wild or holdover trout typically include some form of cover in their lies. Recently stocked trout, whose lives to this point have not been concerned with cover, are less inclined to seek cover.

Once stream temperatures approach 50 degrees, it is enough to recognize good pools, or good stretches of trout water. But during the first few weeks of trout season, especially north of Interstate 80, you should be more specific. You should know specifically which places are most likely to hold trout. Furthermore, you should know as many types of trout lies as possible. The most obvious lies get a lot of fishing pressure. Once fishing gets tough, when the majority of stocked trout have been harvested, the less obvious lies hold a large percentage of the trout that remain in the streams.

Getting down to the trout is the key to success. Because of friction with the uneven bottom, the calmest water in any part of a stream is generally within inches of the bottom.

The deepest pools

Among the favorite lies of freshly stocked trout is an area in larger stream pools where the current moderates and sweeps over a deep pocket. It is typically the largest lie in one of the most common pool types. The bottom is often covered by gravel or fist-size rocks, smaller than the rocks in swifter water upstream and downstream. There might be larger rocks and boulders, but there will be no silt or detritus. Light material including silt and detritus may be on the sides of the lie in calmer water (see Figure 1).

In many streams these pools are the deepest, commonly four to six feet deep in medium-sized trout streams. This part of the pool, the part trout prefer, is seldom longer than the width of the stream at the same place.

This lie is about the easiest to fish. But it can be done wrong. Get the bait to the bottom. Cast into the riffle above the lie, using enough weight so the bait follows the bottom contour. Adjust your weight by adding or removing splitshot, if necessary, to make the bait drift right along the bottom.

Once fishing gets tough, when the majority of stocked trout have been harvested, the less obvious lies hold a large percentage of the trout that remain in the streams. Getting down to the trout is the key to success. Because of friction with the uneven bottom, the calmest water in any part of a stream is generally within inches of the bottom.

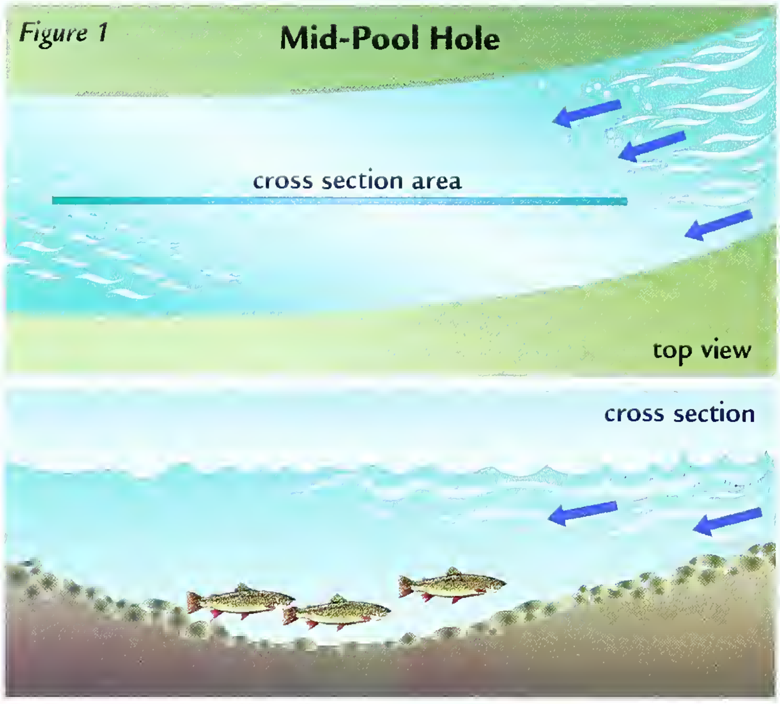


Figure 1 Mid-Pool Hole

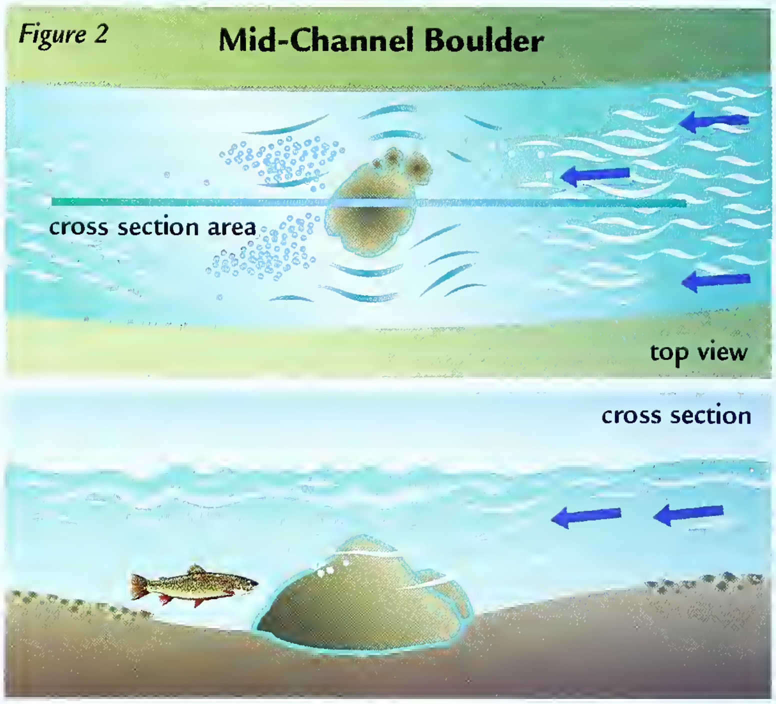


Figure 2 Mid-Channel Boulder

You might even try anchoring the bait on the bottom. This is not generally the way to go about trout fishing. But for freshly stocked trout in cold water, when you are very confident that the bait is close to trout, it can be very effective. Use just enough splitshot to keep the bait in place. The likelihood of trout rejecting the bait increases as the weight increases.

Mid-channel boulders

Mid-channel boulders are among the most common trout lies. They occur in streams of every size, and at virtually any depth (see Figure 2).

The shape and size of the boulder and the strength of the current and water depth vary infinitely, so fishing these boulders is tricky. Trout might be under the boulder at the rear, the sides or the front. They might be behind the boulder, anywhere from immediately behind the boulder to several feet behind it. If the trout are in a feeding mood, they will be somewhere near the place where natural food is swept by them.

But because of the effect current has on fishing line, it might be difficult to get your bait in the right position. This is a good example of the advantage of long spinning rods, or for using a fly rod to drift bait. The long rod minimizes the amount of line in the water, thus minimizing the effect of current on the line. The closer you can get the rod tip to the trout lie, the better your bait control will be.

Still, you always must contend with the differences in current from the surface to the bottom. Trout often, even usually, lie in relatively calm water beneath swifter, often swirling, current. In many cases, the swirling water, which reduces or eliminates the ability of a fish predator to see through the water, is used by trout as cover (see Figure 3).

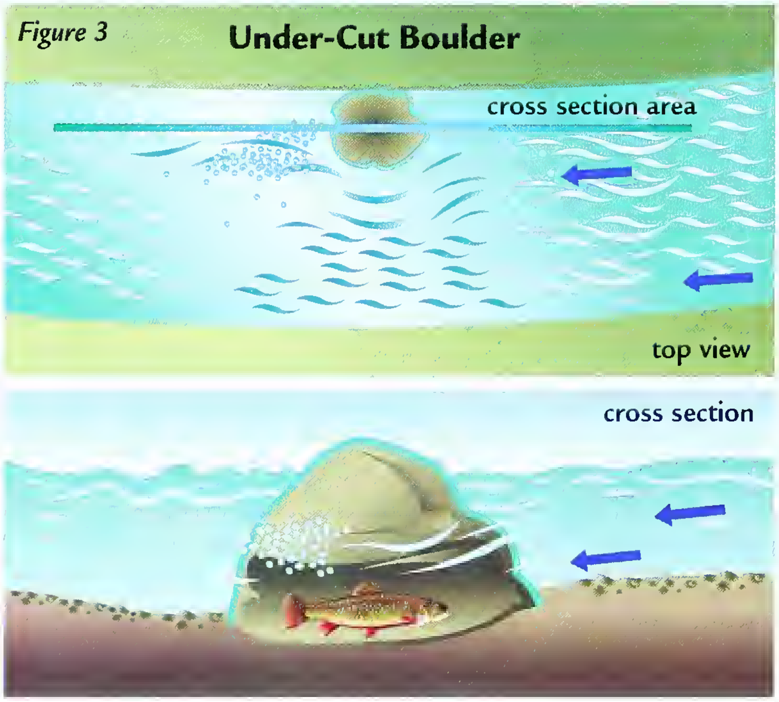


Figure 3 Under-Cut Boulder

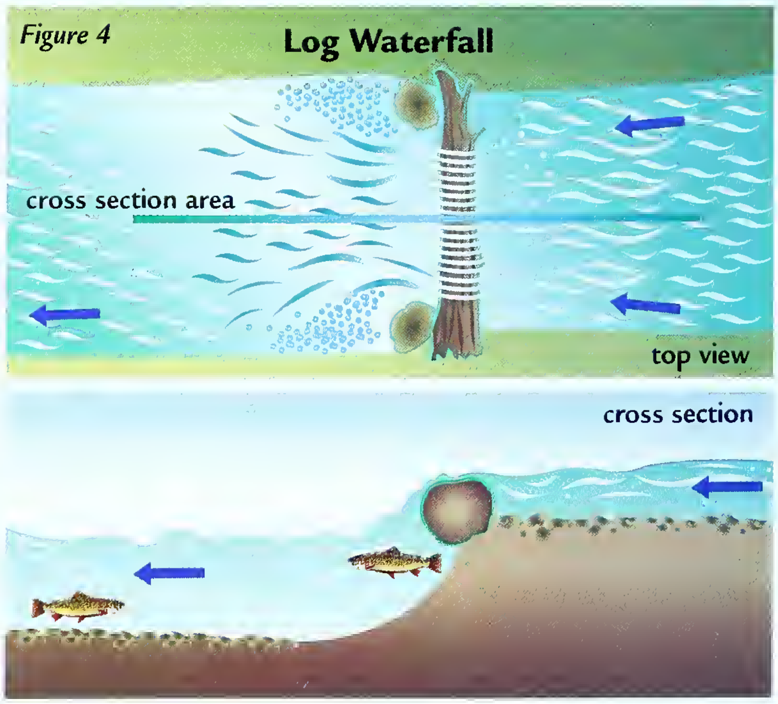


Figure 4 Log Waterfall

Boulders along the edge of strong current are often undercut. These boulders might not be good early season trout lies because too much current flows through the undercut. But if the undercut was created by heavy stream flow, and if the current is somewhat mild, it might be an excellent lie, especially for rainbow trout and brook trout. Rainbow trout are likely to be in swifter water than brown trout or brook trout no matter how cold the water is.

It is essential to drift the bait as close to the boulder as possible, or better yet, under the overhang. A trout might let a hundred baits pass and then strike one that is just an inch closer.

Log waterfalls

Log waterfalls are common in smaller streams, and are particularly good places to find brook trout. They are formed by a log that becomes wedged across a stream. Sand, rocks and sticks jam up on the upstream side of the log, while water rushing over the log erodes a hole on the downstream side.

Trout lie in the calm water under the log where they can dart out to take food from the swirling water under the waterfall. They will also lie in the deep pool below the falls, usually just downstream from the swirling water, or on the sides of it. Heavy stream flow during spring runoff creates most trout lies. When streams return to normal flow, places where strong, swirling currents eroded holes and undercuts have only mild current, at least along the edges.

Larger waterfalls create deep pools at their bases. They are very unusual, though. Expect trout to be holding along the edges of the swirling water (see Figure 4).

Undercut tree roots

Undercut tree roots often hold the biggest fish in small streams when they are associated with larger pools. If you are unable to catch trout in this kind of pool, the reason is likely that a big brown trout resides there. It is virtually impossible to haul a big trout out of the undercut. About the only time such a trout can be caught is while the big trout is prowling the pool at night or when the creek is muddy.

Fishing undercut roots is difficult because trout might be several feet under the roots. It is not unusual for the main part of a hemlock root system to be completely undercut. If too many roots hang in the water, it is impossible to get a bait back to the trout. And if you are fortunate enough to hook a big trout, it will quickly tangle your line in the roots.

If there are no roots to interfere with your line, fish perpendicular to the current, cast upstream and allow the current to sweep your bait under the roots. If there are just a few roots in the way, you might still be able to get a bait in the undercut by standing directly upcurrent and feeding out line with the current (see Figure 5).

Mid-riffle boulder

When your favorite trout stream is getting a lot of fishing pressure and you do not want to crowd into one of the better pools, look for some of the less conspicuous trout lies. Mid-riffle boulders often hold trout and escape the attention of other anglers (See Figure 6).

Boulders that stick above the water create eddies on their downstream sides. Sometimes these eddies are small, relatively calm pockets. Sometimes they are just swirling water. Usually they hold just one trout, but sometimes more. The water might be less than a foot deep, but that is enough for a trout.

If you let your line get in the current on the sides of the boulder, the bait will probably not get into the calmer pocket, or it will not stay there long enough for a trout to grab it. The trick to fishing these pockets is to use a long rod, approach in a crouch, and drop the bait vertically into the pockets. Use just enough splitshot to keep it there for a few seconds.

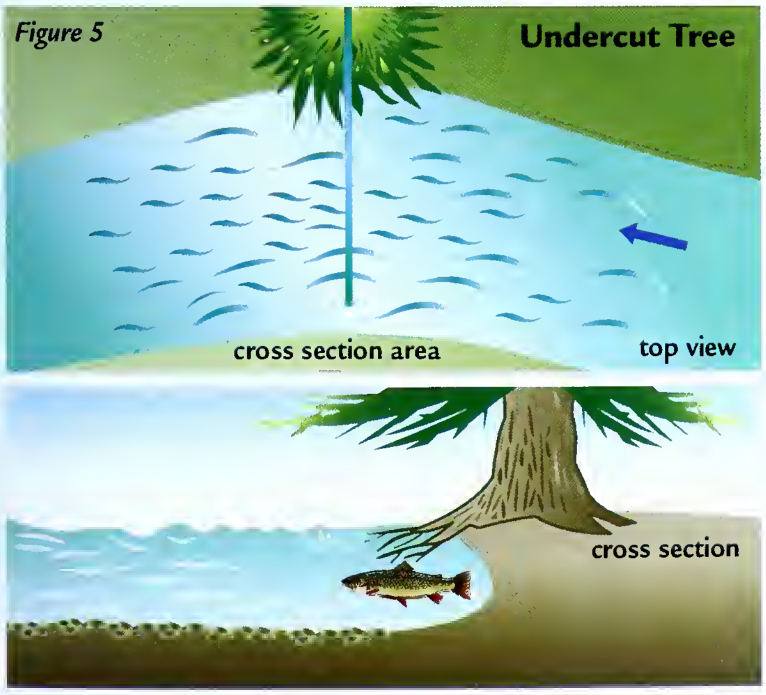


Figure 5 **Undercut Tree**

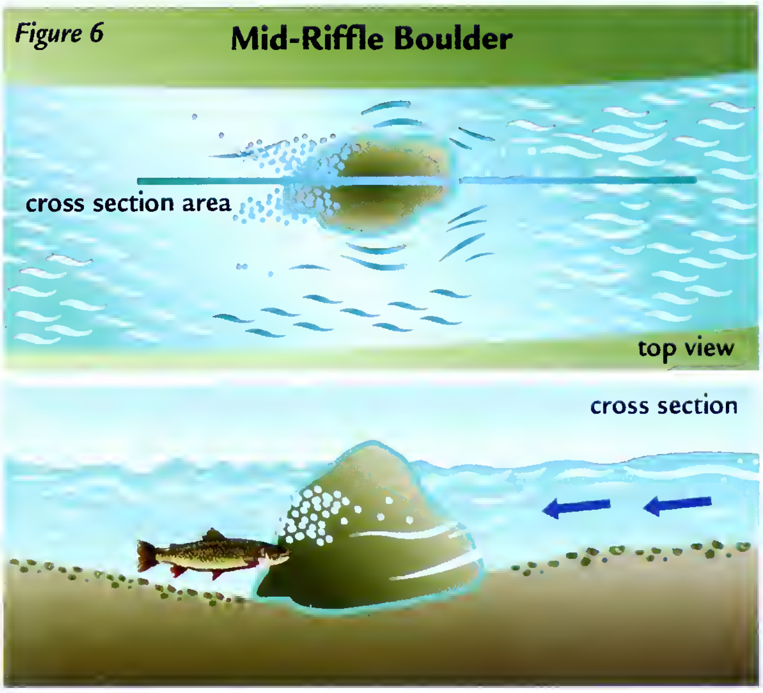


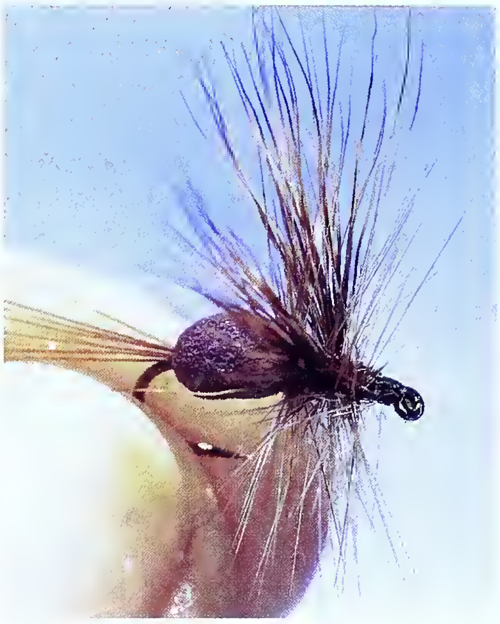
Figure 6 **Mid-Riffle Boulder**

A Foam-Bodied Humpy

by Chauncy K. Lively

Many fly patterns bear characteristics identifiable with specific regions of the country. Most experienced fly anglers can differentiate eastern patterns from those of western origin by their stylistic differences. Eastern dry flies often reflect the so-called "Catskill style," which incorporates lean bodies and sparse hackling. Western dries, on the other hand, are more likely to be fuller-bodied, more densely hackled and entail the use of deer or elk hair for wings, tails and, sometimes, bodies. Many western patterns reflect a need for more buoyancy on the tumbling, brawling streams of the Rockies. However, on the smaller, calmer waters of spring creeks, patterns lean more to the eastern style. Of course, anglers love to travel, and their favorite flies always accompany them wherever they go. The inevitable consequence is the use of western patterns on eastern waters, and vice-versa. One popular westerner to find a welcome second home in the east is a dry fly known as the Humpy.

The original Humpy has a body of deer or elk hair bound as a bundle over the hook shank, folded back over the bundle and tied off behind the wings. The result is a bulged body with great buoyancy and a profile from which the fly's name derives. The tying technique is an extension of that used to dress hair ants, beetles and other terrestrial patterns. However, bundled and bulged hair has a drawback: It's vulnerable to the sharp teeth of trout. We soon discovered this failing, but since the flies were so effective and we had no solution to the problem, we passed it off as a necessary evil. Then along came the new closed-cell synthetic foams and the picture changed.



I soon found that a strip of foam sheet could be dressed with much the same technique as bundled hair, since foam responds to compression by the thread in a similar fashion. I substituted foam for deer hair in ant, beetle and other terrestrial patterns and found a marked improvement in both durability and buoyancy.

Foam is generally available in fly shops in sheet form and is known under the generic name of "fly foam." It is available in several colors, but if another shade is desired, it's an easy matter to tint white foam with a permanent marking pen of appropriate color.

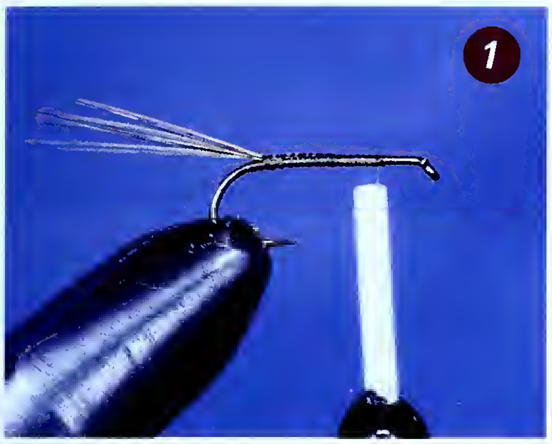
The Foam-Bodied Humpy uses a foam strip as its body material and its dressing mimics the way a bundle of hair is manipulated in the dressing of the original Humpy. I have substituted hackle barbules for tails in place of the bunched deer hair of the original pattern. A small bunch of 15 to 20 hackle barbs is tied in at the tail position and a turn or two of thread is taken snugly underneath the base of the tails. The latter maneuver flattens the bunch of barbules and fans the tip of the tails, a condition that helps prevent the fly from rolling on the water during windy conditions.

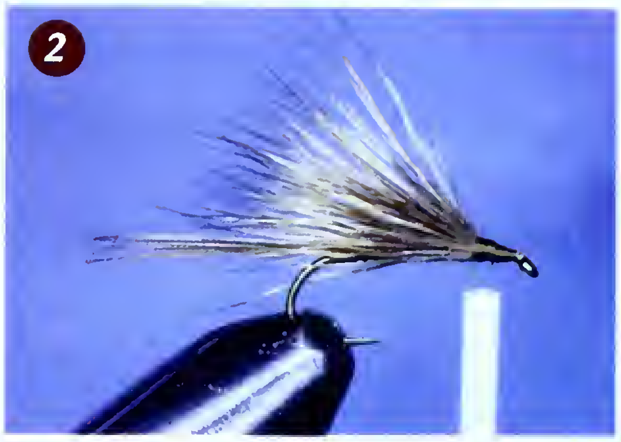
In selecting deer hair for the wings, the type of thick body hair commonly used in spinning hair bodies should be avoided. Such coarse hair tends to flare when bound securely, and it is difficult to manage when used for wings. Thinner hair behaves better when bound under pressure, and it consistently produces superior wings.

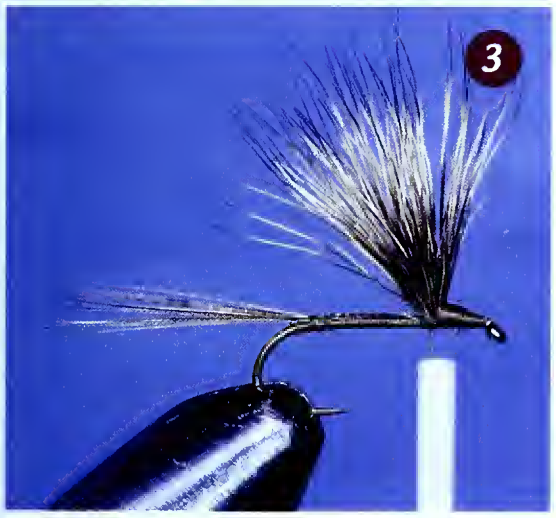
I use only natural, undyed hair. Natural deer hair varies in shade from hide to hide, but I have never found exact shades to be important in dressing wings. The hair is first tied in over the shank as a single bunch, downwing style. Then it is pulled upright and wound behind to maintain its vertical posture. The dubbing needle is then used to separate the hair into two wings, and cross windings are made between to lock them in place. Optionally, the wings may be flattened by first applying a generous bead of lacquer to the base of each wing. In a few minutes, when the lacquer begins to harden, squeeze the lacquered hair flat with fine-nosed pliers.

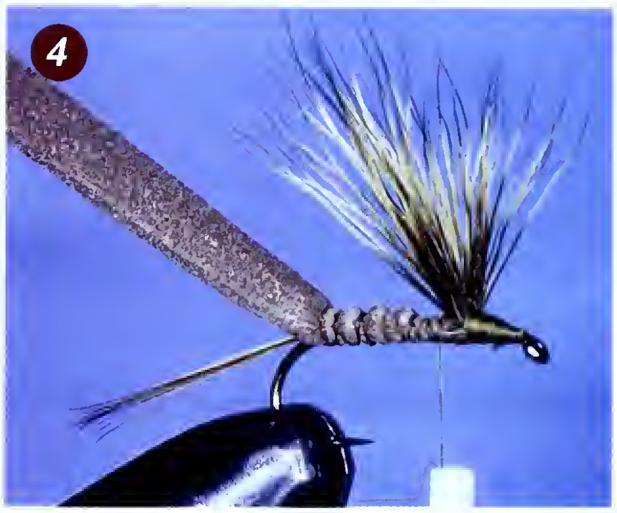
Hackling the Humpy follows the general routine of winged dry flies with collar-style hackle. If you use a long, stiff-fibered hackle, one should be enough. If the fibers are soft and the hackle is short, use two. The hackle is secured by its stem behind the wings and wound forward in close turns, with most of the turns behind the wings. The final turns are made in front of the wings, where the hackle is tied off. The excess is then trimmed and a whip-finish is made.

The Foam-Bodied Humpy is one of those generic patterns I like to use when few specific insects are showing. On heavily fished streams the trout often seem to adopt a ho-hum attitude toward the standard patterns they see routinely. On such streams the distinctive appearance of the Humpy is thought to trigger rises out of sheer curiosity. It's a rugged, general-duty fly, making it a valuable addition to anyone's fly box.







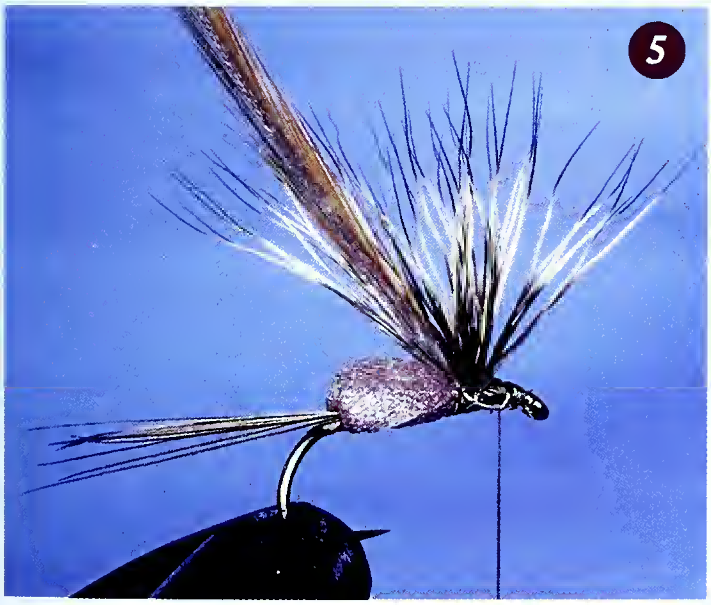


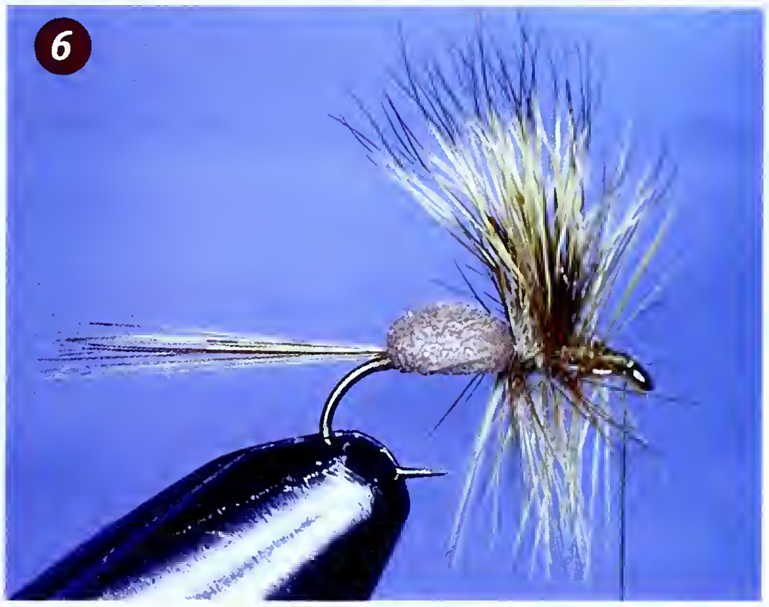
1. *Tie in the thread behind the eye and wind back to the bend. For tails, tie in a bunch of 15 to 20 stiff brown hackle barbules and make two turns under the base of the tails. Then wind the thread over the tail butts to the original tie-in.*

2. *Cut a bunch of thin body hair and tie it in as a single downwing.*

3. *Pull the wing upright and wind behind to secure it vertically.*

4. *Separate the hair with a bodkin and cross-wind between the two wings to anchor. Cut a strip of brown foam $^{1}/_{16}$-inch thick by $^{3}/_{16}$-inch wide and tie in one end behind the wings. Bind the foam to the shank in spaced turns as far as the bend and return the thread to a point behind the wings.*





Dressing: Foam-Bodied Humpy

Hook:	Size 10 to 18 regular shank, fine wire.
Thread:	Brown 6/0, prewaxed.
Tails:	Stiff brown hackle barbules.
Wings:	Thin deer body hair.
Body:	Brown foam strip.
Hackle:	One brown feather if using a full, stiff-fibered hackle; two if the hackle and fibers are short.

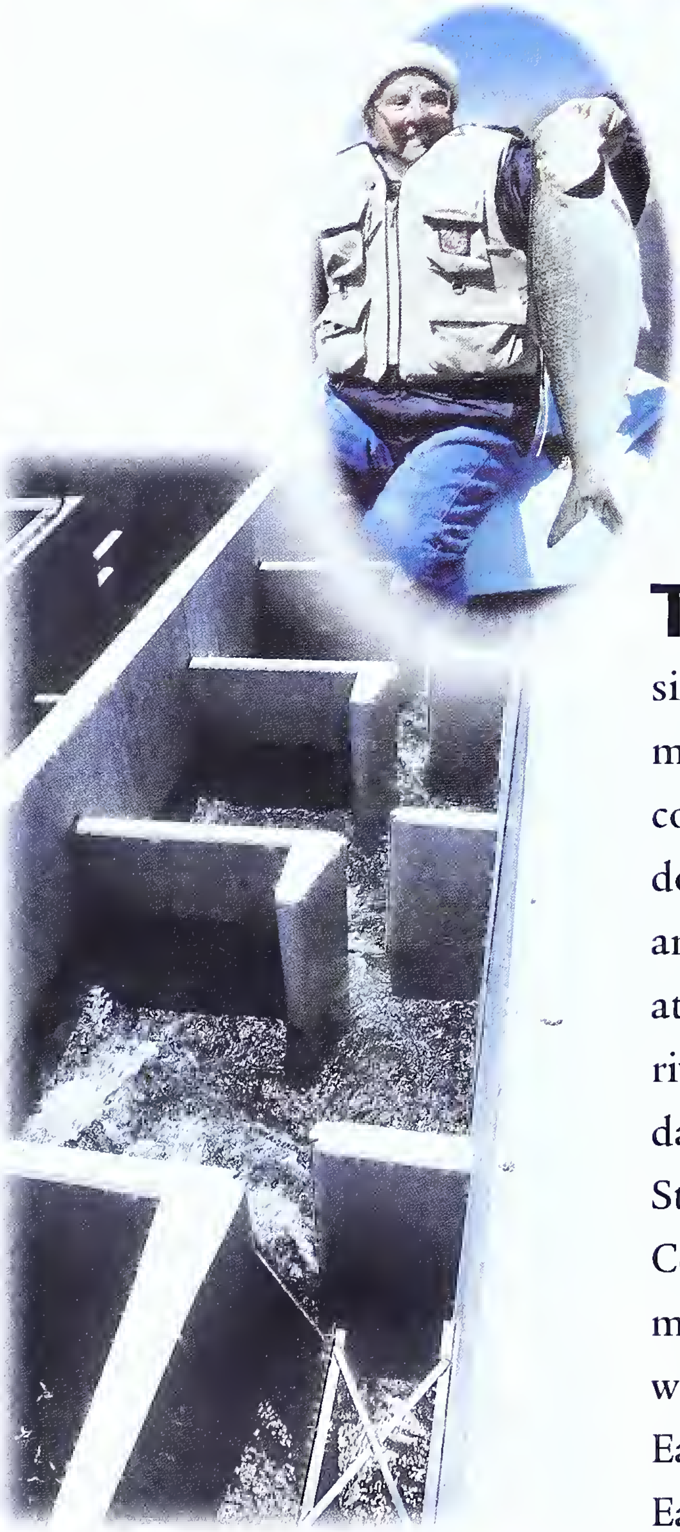
5. *Pull the foam strip forward over the shank and bind it down with three turns behind the wings. Trim the excess foam. Remove the webby barbules from the lower part of the hackle and tie it in by its stem behind the wings, vertically, on edge and with the dull side facing the eye.*

6. *Secure the hackle pliers to the hackle's tip and wind all but the last two turns behind the wings. Tie off the hackle in front, trim the excess and whip-finish the head. Apply lacquer to the finish windings.*

LEHIGH RIVER AMERICAN SHAD:

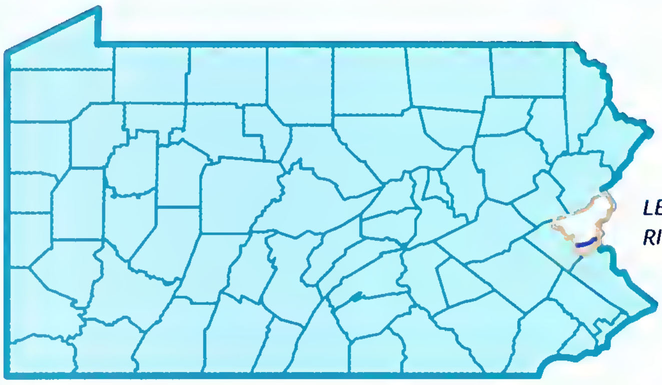
THE FIRST SIX YEARS

by David A. Arnold, Area 5 Fisheries Manager



The 1999 American shad migratory run marked the sixth year that the Lehigh River has been open to most migrating fishes. Currently, the Lehigh River contains five functional dams. Only the three most downstream dams have fishways, the Easton, Chain and Hamilton Street dams. The Easton Dam is right at the mouth of the Lehigh River, or river mile 0.0. A river mile designation shows how far upstream the dam is from the river's mouth. Chain and Hamilton Street dams are at river miles 3.0 and 17.0. Cementon and Francis E. Walter dams are at river miles 24.0 and 76.5. The Hamilton Street fishway was constructed in 1983, and the fishways at the Easton and Chain dams were built in 1993. Only the Easton and Chain dam fishways contain a private observation room with a viewing window to monitor fish passage. In addition, two public viewing windows were installed at the Easton fishway.

Easton Dam and fishway as seen from Easton's Scott's Park



We have been monitoring fish passage through the Easton Dam fishway since 1994, and the Chain Dam fishway since 1996. Fish passage was monitored via time-lapsed video recording.

Operating a fishway

Operating a fishway sounds simple and should be, but it is not, at least for the Easton fishway. Mother Nature has flooded the Easton fishway to some extent nearly every year it has been open. Fishways that are completely in one river system, such as the Chain and Hamilton Street fishways, are hardly ever negatively affected by flood waters.

How many shad have passed through the Easton and Chain dam fishways?

Easton Fishway: American shad passage showed a steady increase from 1994 (87), 1995 (873), 1996 (1,141) and 1997 (1,428) to 1998 (3,293). But passage decreased in 1999 with a total passage of at least 2,346 shad. However, this decrease in passage is applicable only when compared to 1998's passage, because it is still higher than 1997's and that of preceding years. The passage of 1,141 in 1996 could have been higher, if it were not for the "Flood of 1996." The subsequent increase in passages, since 1994, was the result of fine-tuning the fishway's operation, and the more frequent cleaning of the attraction flow system by the Delaware Canal State Park and Commission staff.

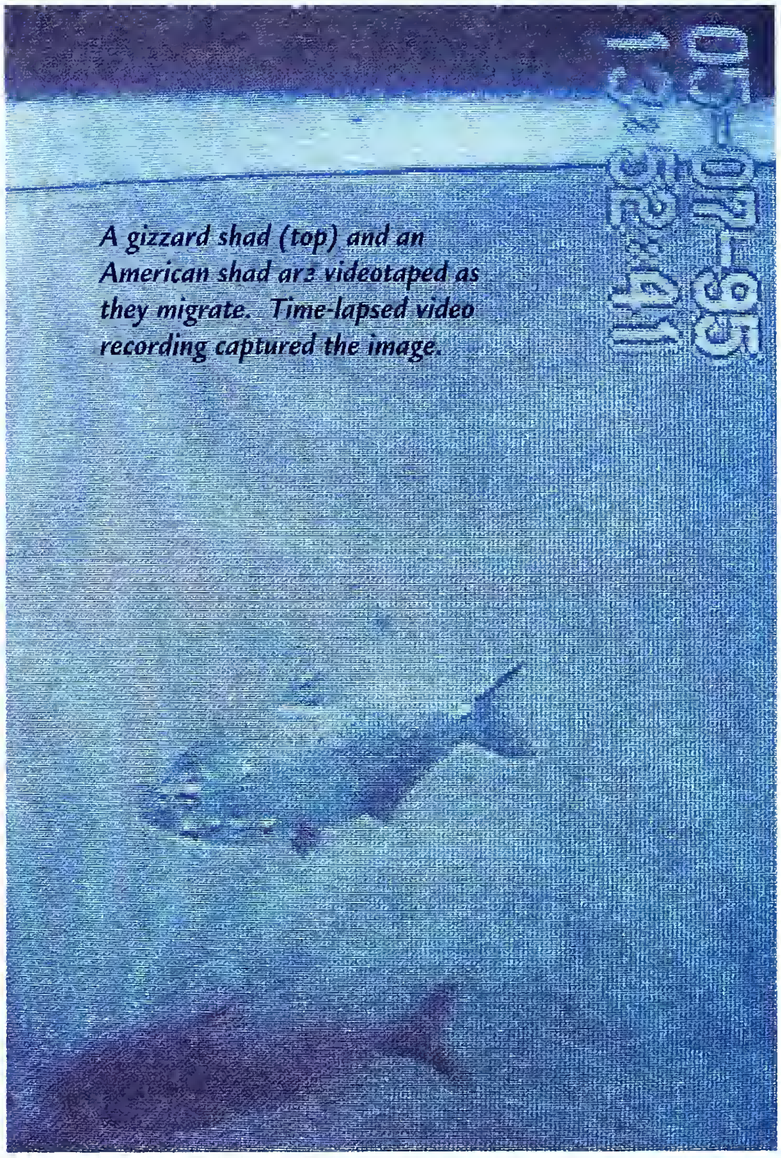
Chain Dam Fishway: In contrast to the Easton fishway, passage varied greatly. The highest and lowest passages occurred in 1998 and 1997 with recordings of 698 and 126. Passage in 1996 and 1999 were similar with recordings of 696 and 674. The passage of 496 shad in 1996 was outstanding, because it represented a passage rate of 43 percent of Easton's total passage. However, in 1997 it passed only nine percent of Easton's total passage. A prolonged period of low river flows may have negatively affected passage. With more moderate flows in 1998, passage increased to 21 percent of Easton's total passage. However, even with low flows in 1999, passage was similar to 1998's at 20 percent.

During periods of low flows, a sand bar partially cuts off the calm resting pool created near the fishway entrance. To compound this even further, its entrance and attraction flow are pointed directly downstream along the shoreline. In addition, during these conditions, the dam's undertow becomes the attraction force for the shad. Thus, they move close to the dam and avoid finding the fishway's entrance. Temporary modifications addressing these factors made near the fishway's entrance in 1999 may have increased passage.

How long does the shad run last?

Many factors influence the shad's use of the fishway. Their passage through the Easton Dam fishway in 1995, 1996, 1997, 1998 and 1999 commenced on April 20, April 27, April 14, April 6 and April 15, respectively. The last day of recorded passage for each year occurred on June 27 (1997), June 30 (1995 and 1998), July 5 (1999) and July 11 (1996). Changes in mean daily river temperature appear to affect their movement. Generally, an increase in river temperature during May corresponds to increases in passage. Conversely, decreases in river temperature correspond to periods of decreased passage.

Shad passage through the Chain Dam fishway in 1996, 1997, 1998 and 1999 began on May 11, April 26, April 13 and May 1. The last day of recorded passage for each year occurred on July 3, July 2, July 4 and July 6 (taping ended). The lag time in initial passage between the two fishways has ranged from seven to 15 days.



A gizzard shad (top) and an American shad are videotaped as they migrate. Time-lapsed video recording captured the image.

Best viewing time

Hourly passage through both fishways is similar. They are most active from 6:00 a.m. to 8:00 p.m., and are least active from 9:00 p.m. to 5:00 a.m. With respect to their active period, the 1998 and 1999 passage suggests that the best time to view them is from 2:00 p.m. to 7:00 p.m.

The 1999 shad run marked the first time in Fisheries Management history when known-age shad have returned. This is possible based on the distinctive tagging patterns developed by the Commission's Division of Research. Our Division of Research expects the millennium run to contain known age three-, four-, and five-year-old shad. The development of the returning run comprised of various known-aged shad will greatly aide the management of this species throughout the Atlantic region, and perhaps worldwide. The Commission is in the lead in American shad management.

This is important, because aging work in fisheries is done through scale analysis, which is less invasive to the monitored species. Furthermore, for American shad, scales are the only structure used to determine the incidence of repeat spawning. Thus, it is also important to determine at what ages repeat spawning had occurred.

Determining the ages of American shad and other marine fishes through scale analysis is unlike that for freshwater species above or below the equator. In North America, aging freshwater fish is possible because of the seasons. Those fish with scales, such as bass, walleyes and trout, lay down a pattern of growth on their scales similar to rings of a tree. Growth is greatest during the late spring through early fall. Thus, the rings are generally spaced farther apart. However, through the winter, growth slows and the rings become compressed.

This pattern allows the biologist to age freshwater fish species with scales. Marine-dwelling species usually do not display this pattern because they follow thermal currents of a specific temperature region.

In addition, shad also have an additional groove line, called the transverse groove. Transverse grooves are laid in a half-moon pattern beginning at the base of the scale to its edge. The current aging methodology is to count the number of transverse grooves and look for what appear to be annulus markings on the scale. The combination of these two factors currently allows shad to be aged.

American shad also lay down a distinctive mark on the scale, called a freshwater mark. This mark is laid down when the young-of-the-year shad (Age 0) leave fresh water and enter the ocean. Once in the ocean, they follow the thermal currents of the Gulf Stream from Florida to Nova Scotia. Because they live in roughly the same water temperature year after year until they return to fresh water to spawn, their scale aging pattern is not the same as that displayed by freshwater species. Thus, the above tagging method developed by the Commission Division of Research is a vital key to understanding and managing the American shad inland and marine fisheries.

Sampling the migratory runs

Adult shad were sampled during the migratory runs of 1995 through 1999. Hatchery stocked fry returning as adults dominated the samples. Thus, the Commission's stocking program has greatly aided the American shad's restoration process in the Lehigh River. The incidence of wild shad was low. The term "wild shad" includes strays from other rivers, and/or those resulting from spawning in the Lehigh River. For returning wild Lehigh River fish, we expected this because not enough years had lapsed for such fish to have attained sexual maturity and return in good numbers. Thus, the wild component mostly consists of straying shad. Their source may be the Delaware River or other coastal rivers. Shad mingle while traversing the Florida-to-Nova-Scotia circuit, following the Gulf Stream.

Repeat spawning

To assess this aspect, we detected what is known in fisheries jargon as a "repeat spawning rate." Adults returning to fresh water from the ocean go through demanding physiological changes. Additional stress is placed on the shad because they do not eat during their spawning run. They must use stored energy to sustain themselves. This stored energy lies in body fat reserves, muscles and protein structures, such as scales. The use of these reserves causes the scales to reabsorb partially, leaving what we call a spawning mark.

The repeat spawning mark means that the adult has spawned once, went back to the sea, and returned to spawn again. Multiple spawning marks are possible. The Hudson River Fisheries Unit (NY Department of Environmental Conservation) has sampled shad with four to eight repeat spawning marks. In addition, research shows that the rate of repeat spawning increases with the northerly latitude of each shad's home river (that is, from St. John's River in Florida to the Delaware, and finally to St. John River in New Brunswick, Canada).

Generally, the more northerly the river system, the greater is the incidence of repeat spawning. Florida female shad have a higher fertility rate. They produce the greatest number of eggs per body weight for their given size or age. With increases in latitude of the shad's home river, the fertility rate decreases. Thus, repeat spawning is necessary for the more northern populations to sustain themselves. In time, although not necessarily in the same year, northern females spawn similar quantities of eggs as their southern counterparts do in one year.

The Lehigh's incidence of repeat spawning in 1998 and 1999 was 12.5 and 3.1 percent. These rates may seem low. However, they are comparable to those reported for Delaware River at Smithfield Beach (1996-1998: 10 percent; and 1999: 4 percent) and Raubsville (1998: 22 percent; and 1999: 10 percent) areas. Because the Lehigh is just beginning its restoration, the fact that repeat spawning is occurring is considered very encouraging.

The decrease in repeat spawning noted above for the Lehigh and Delaware rivers may reflect a lower than expected shad run in 1999. The reason for the possible decline is not fully known, but all Delaware River-bordering state fishery agencies, through the Delaware River Basin Commission's Fish and Wildlife Cooperative Technical Committee and the Atlantic States Marine Commission, are studying the matter.

However, the fact that repeat spawning had occurred in 1999 is a positive sign. The Lehigh River's decline may also be a reflection of the younger makeup of the shad run in 1999. The lower repeat spawning rate at the Delaware River Smithfield Beach site may be the result of traveling such a great distance in fresh water. Lehigh River shad have shown only one repeat spawning mark. Even though the Delaware River shad have shown mostly one mark, a few had two repeat spawning marks.

Lehigh River shad reproduction

We have assessed the young-of-the-year (YOY) shad in July, August and September during 1995 through 1998. The 1999 samples, as of print time, were undergoing analysis. We sampled hundreds of YOY during this three-month period. The percentage of wild YOY caught was one percent (1995), 11 percent (1996 and 1997) and two percent in 1998. The Commission's hatchery program is still providing the bulk of the YOY's abundance. The size of the YOY shad (wild and stocked) by September ranges from 2.6 inches to 5.4 inches. Wild YOY shad are generally larger than stocked shad.

Considering all the factors affecting the American shad migration into the Lehigh River, their restoration is going steadily well. The process is slow. However, the day will come when one can see shad steadily swimming by the observation windows of the Easton Dam fishway.

This article is dedicated to the memory of Daniel Bourke and David Chiles. Dan, a Fisheries Technician, had been with the Commission for 28 years. He spent much of his career working on restoring the Lehigh shad run. David Chiles, a private citizen, was very active in restoring American shad to the Lehigh River. He was a member of the Delaware River Shad Fishermen's Association, and the first Commission fishway worker at the Easton Dam fishway.

Tying Youth to the Outdoors

by Valerie Pettigrew

How old were you when you learned to tie your shoes? The answer may reveal a hidden talent or interest you might have. At least it seemed that way for Sarah Senko, a freshman at Cranberry High School, Venango County. Sarah was younger than most when she learned to tie her shoes–she was only three years old. And now, 12 years later, she's tying more than just her shoes.

A few years ago Sarah took a fly-tying class for the fun of it, to see what it was about. She found the fine art of fly tying very interesting and has continued learning how to tie flies ever since. However, Sarah never used her flies to do any fly fishing. Many of you might ask, "Why tie flies if you don't use them to fly fish?" Sarah has many reasons; one of them is that her parents use them! Her dad sees a fly he wants, buys it, brings it home to her and she re-creates the pattern.

Sarah started with her dad's old vise and bobbin three years ago. It wasn't top-of-the-line equipment, but it got the job done. Then, her first fly-tying teacher and mentor, the late Bob Lambert, did something special for Sarah. He had become ill and unable to tie any more, so he gave Sarah some of his equipment.

Though Sarah had a helping hand from Mr. Lambert, she made sure to point out that it isn't very expensive to get started. She suggests that those who think they may enjoy tying flies should start small until they're sure they'll stick with it.

"A vise can be as little as $25 or as much as $400," Sarah explains. The cost of tying your own flies can range from 10 cents to 50 cents each. Compare that to the prices of store-bought flies.

Sarah also ties hundreds of flies each year and donates them to the elementary school's Santa's Workshop, where students go to shop for family Christmas gifts. "The year I learned how to tie flies my mom asked me if I would donate some to the workshop because it didn't have many gifts that kids could buy their fathers," she said.

A selection of flies tied by Sarah Senko. She started tying flies three years ago.

photos-Valerie Pettigrew

Venango County is one of northwest Pennsylvania's hottest trout fishing areas, so Sarah's flies are popular gifts for kids to buy their angling parents. The Fish & Boat Commission puts some 110,000 trout in 18 Venango County streams each year. That's not including the more than 20 wild-trout streams located in the county.

Fly fishing usually comes first, and to cut down on costs, anglers take up fly tying. But Sarah did things a little differently than most people. Sarah knows how to fish; she's been bait fishing since she was a toddler. She just hadn't considered fly fishing until recently. It's hard to go from bait fishing to fly fishing, she said. "It's a whole different way of fishing."

It's been a little while since some of us attended high school, but the memories can seem like yesterday. Homework, football games, band rehearsals, cheerleading practice, basketball tryouts–so many things to take up your time. But what if you didn't have any interest in all those typical activities? Most schools offered only the "usual" sports. There were no after-school angling classes–no outdoors-type classes at all. The ancient art of angling seemed not to exist in most schools.

Sarah is fortunate to be in a rural school district where outdoor sports are considered just as important as football and basketball. As a freshman in high school, she wasn't interested in any of the usual activities most schools offer. She's an outdoorswoman at heart. And though she considers herself a novice fly tier, her love of it has led to her teaching others.

Four days a week for two weeks during late January, Sarah helps teach an after-school fly-tying class to sixth graders. "That's how I got my start," she said. Thanks to monetary donations from the home and school group as well as the Oil Creek Chapter of Trout Unlimited, the class has been offered for the past six years. The money was used for materials and equipment so that the students had their own fly-tying vises. Sarah has helped teach the class during the past three years.

This year, 20 students signed up, boys and girls both, she was quick to point out. Sarah thinks the girls are actually a little better at it mainly because their fingers are smaller and smoother. The students were divided into two groups of 10; each group met four days a week for one week. Any student who shows interest when the class is over is referred to outfitters and fly shops in the Venango County area. Though the after-school class doesn't get into the angling side of things, it introduces kids to a different kind of angling.

In addition, she teaches fly tying to young people at youth field days and hopes to incorporate her teaching into more outdoor-related activities that the school district sponsors. Not all kids can play the typical sports because of gender, health or financial reasons. This is the perfect alternative, she said. "If there's water around, kids should be exposed to fishing and fly tying."

She enjoys taking people to her work area and showing all her materials and explaining what they are and what types of flies she ties with them. Much of the dyed material isn't recognizable because the color throws people off. During one of her fly-tying classes, Sarah held up an animal's tail and asked her students what they thought it was. It was green and black and about six to eight inches long. No one guessed it was a calf's tail because of its color. Sarah said that ninety percent of her materials are natural. That's more of a personal preference, but she is proud of it.

Something Sarah found interesting, though she wasn't sure where she saw it, was an article on how fly tying is used in hospitals as therapy for kids with emotional disorders. "When I'm stressed out, I tie a bunch of flies," Sarah said. "It's relaxing."

The after-school fly-tying class is offered only to sixth graders, but Sarah teaches kids of all ages at youth field days, and she hopes she'll be allowed to teach fly tying elsewhere. There's only one requirement for how old you have to be to tie flies, Sarah said. "You have to be able to tie your shoes. If you can't tie your shoes, you can't tie flies."

Casting Lines

with Dave Wolf

The Lure of a Large Fish

Sam turned the air conditioner on high. The old lab changed position to capture the cooler air. Sam rifled through his stack of magazines, unread since trout season began. He had been busy since early April, chasing shad, bass and trout, and had found himself, quite by accident, engaged with a musky. He had cast an attractive lure, something the toothy fish threw back in his face. He would have loved a longer relationship with the fish, but it was not be. And bobbing on the river in the battered johnboat with a shiny new motor, he mourned the loss.

However, a resilient man, Sam checked the line for abrasions close to the lure, and he inspected the hooks. He snipped off a foot of line, retied and cast again, without response. Then he pulled the anchor and allowed the craft to drift freely. The musky, upriver now, sulked in the depth of a deep pool—they would meet again—he had mentally marked the spot, and would return, this time with a lure designed for muskies, not bass. The fish would be a challenge, a certain amount of time allocated to luring it back, each time he came here. Maybe. Sam, too, could be fickle and he knew that he would not always take the time to change the lure, attach a shock-tippet and cast into one of the deeper holes of the Susquehanna. He might just snub the musky and fish through the pool and riffles below with whatever lure he had chosen.

He was well aware that there were more fish in the sea of the river, and that a good bass was as rewarding as anything else that swam there. Still, muskies are solitary, much like Sam. Many nights, when the air conditioner did not cool his small apartment sufficiently enough and sleep was difficult to find, Sam thought of the fish. A large toothy critter, often labeled ugly. A fish that was supposed to require a thousand casts. Sam was smug because he had cast only once on that given day, quick to forget that he had racked up thousands of casts over the same stretch of water and had taken more bass there than he could remember. That was the first time he had seen a sign of the musky, much less hooked up with it.

Sam did not think of himself as a musky fisherman. It required too much patience from his restless soul. He preferred to take the easier route; catching bass until his arm tired. Although even a few bass meant a good day to Sam, after all, he released his fish. Numbers were not part of the equation. He believed that there was little reason to keep score. But a midsummer musky might mean changing his mind, just this once.

Large fish are not important, he mused as the air conditioner threatened to brown out his apartment.

Sam was in a quandary. He had his firm conviction well intact, and this musky was going to rearrange the furniture of his mind, if he gave in to the lure of a large fish. He would have to move the comfortable but battered recliner from the "big fish mean nothing" corner to the "they have their merits" side. That would be a small concession, Sam reasoned. The end table containing "difficult fish are the most sought-after"-it could be rearranged easily enough. "Muskies are difficult fish," he muttered aloud.

In the closet, Sam was destroying the last remains of order. He was crawling into the deep recesses to find a rod and reel designed for saltwater fish. It was stiff enough to bring a tuna to the boat. The reel had a line capacity more suited for billfish than anything that swam in the river.

He returned to the easy chair and attached a steel tippet to the 30-pound test that had a little more "memory" than he would have liked, but the line seemed fine otherwise. Sam could cast the line, without a lure, into the water, open the bail and allow the line to uncoil itself. It had worked in the past for him, and should do so again.

Sam had a plan. He would wait until the sun lowered and then head for the river. Muskies, he thought, prowled late in the day and again in the evening. If things went as planned, he would be hanging around the pool with a large musky lure, and if he hooked the fish, his chances of landing it were good.

The old lab walked stiffly to Sam's side, sniffed the rod, and gave him a puzzled look. Sam patted the old dog's head and said, "Everything is okay—I don't know what this fish has done to me, but we are going to find out."

After the gear was properly assembled to Sam's liking, he beckoned the dog. They rode the short distance to the old johnboat, and Sam methodically loaded his gear. The Lab waited patiently in his seat at the bow.

After a short run downstream to the hole where Sam first located the fish, he was disappointed to see another angler casting into its depths. He cast aimlessly into the waters below the area where he wanted to be, until the intruding boat pulled up anchor and started upstream.

The young man slowed the boat and turned to maneuver behind Sam's, apparently taking note of where Sam had been casting. As the boat neared, Sam yelled out, "How did you do?" The young man, with a broad smile, obviously happy someone had asked, replied, "I took the best musky of my life right up there," pointing to the area where Sam had been headed. "It was close to 40 pounds, maybe more, I'm not sure-I released him."

Sam congratulated the young man and then asked, " Did you know he was there?"

"Nope," the young man replied. "I fished this area for years and never saw a sign of a musky there."

Sam pursed his lips and squinted. He knew he'd return for the musky. He was hooked.

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Migratory Fish Restoration

by Carl Richardson

CONSERVE 2000
PROTECT PENNSYLVANIA'S WATERS

This article is the third in a series of articles on the major topics of concern in the Commission's theme, "Conserve 2000." This feature explains the history, decline and restoration of migratory fish in the Susquehanna and Delaware River watersheds.

If you live in central or eastern Pennsylvania, you have likely heard or read a lot about American shad restoration efforts. Maybe you've heard or read about efforts to restore striped bass, too. Millions of dollars and thousands of hours of scientists' time have been spent on these efforts. Many non-anglers (and a few anglers, too) ask the question, "Why restore these fish?" Some people have even said it can't be done, or it will be too expensive, especially with American shad restoration.

Unfortunately, the problems that have plagued shad, stripers and other migratory fish date back at least 200 years, maybe more. The problems are complex and depend on many variables. That's why many critics believe the abuses of the past can't be reversed. If you have tangled with one of these fish, you will agree, though, that it's worth it to restore these magnificent fish!

Thousands of anglers head to the Delaware River and the lower Susquehanna River just below the Pennsylvania state line each spring to fish for American shad. Unfortunately, the problems that have plagued shad, stripers and other migratory fish date back at least 200 years, maybe more.

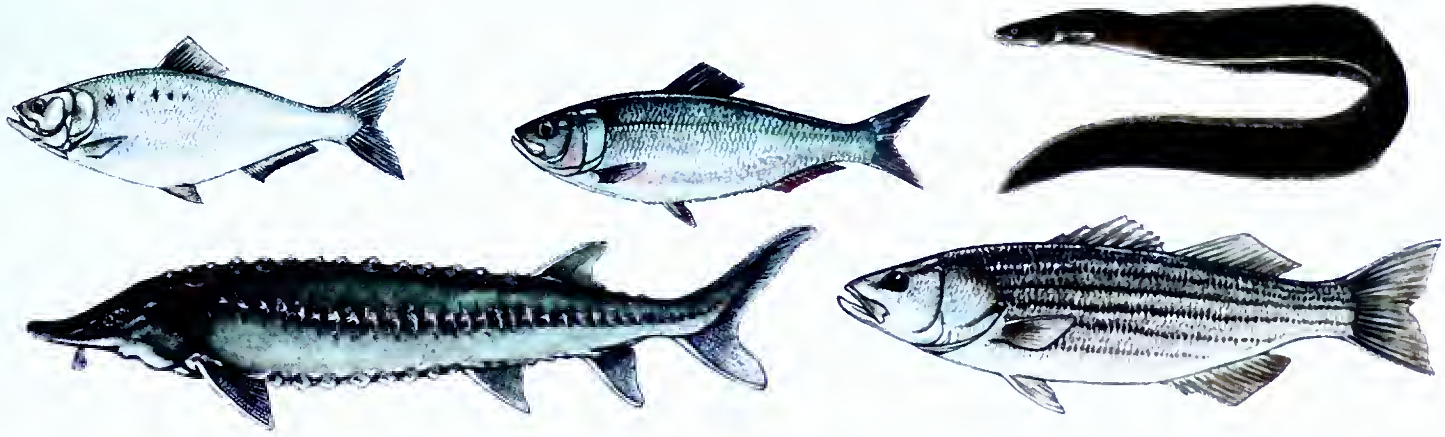
photo-Andrew Shiels

The fish

Even though the American shad gets most of the press, there are other anadromous fish migrating back to Pennsylvania's waters. These Atlantic Coast fish make their way back to the Susquehanna and Delaware rivers. They include herring, striped bass and Atlantic sturgeon.

While they spawn in different sections of our rivers, their life cycles are very similar. Eggs are laid in fresh water, and young spend time in our rivers eating and growing. Immature fish migrate to the open ocean, where they make seasonal migrations along the coast. They spend several years moving north in the spring and south in the fall. Each species spends several years in this migration pattern until mature. When mature, they make their way back to the river of their birth.

Over the course of a lifetime, these fish will have covered thousands of miles, swimming as far north as Maine and Canada, and as far south as



Florida. So they aren't really "Pennsylvania" fish, because they call the waters of the Susquehanna and Delaware rivers home only for a few months.

Food source for generations

Just as we count on the annual migrations of these fish, so did Native Americans and settlers. The fish were abundant, and the supply appeared never-ending. It was this abundance that so impressed European explorers and, later, settlers. In 1608, Captain John Smith wrote of the abundant fish and meetings with the Susquehannock Indians.

The writings of Smith and others did not go unnoticed by those wishing to settle the New World. Other explorers also wrote of the abundant shad and herring. Fishing equipment was listed among the essential items for Europeans wanting to settle in the New World.

Before the early 1700s, most of the fish were caught and consumed by families—they were subsistence anglers. With the growing population came a growing market for shad. This demand created an opportunity for commercial fishing operations.

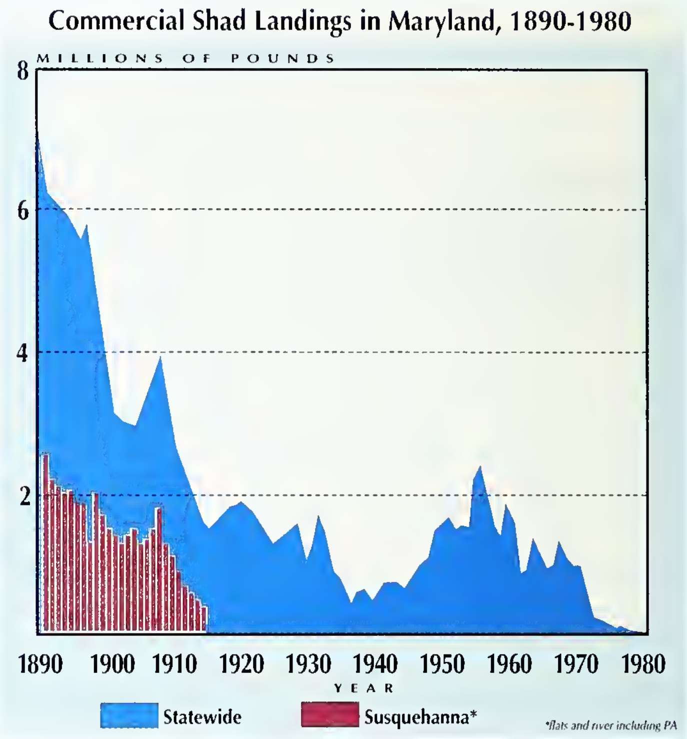
Not only would the increasing demand affect the fishery, but fishing technology changed things forever. Larger seines, some 400 feet, were brought to the Susquehanna by Connecticut Yankees settling in what is now known as Luzerne County. Gill nets would also be later used by commercial anglers. This gear could be used to gather hundreds, if not thousands, of shad in one day.

photo-courtesy of U.S. Fish & Wildlife Service

Susquehanna Flats, Maryland, around 1890. In 1608, Captain John Smith wrote of the abundant fish. Fishing equipment was listed among the essential items for Europeans wanting to settle in the New World.

Demand was also placed on other fish. Records of commercial fishing for Atlantic sturgeon date back to 1849. As the gear and boats improved, the catches of migrating fish increased. By 1890, more than seven million pounds of Atlantic sturgeon were landed commercially on the coast. Biologists refer to what was occurring to the Atlantic sturgeon stocks as "clear cutting." Fish were harvested before they could reproduce. It wasn't long before the entire population crashed.

In that same year, 1890, nearly eight million pounds of American shad were harvested in the Chesapeake Bay alone! Susquehanna River fishing operations accounted for some 2.3 million pounds. Commercial shad landings of shad plummeted the following year.



Overfishing was not the only force affecting the stocks of migrating fish. As early as the mid-1700s, dams began blocking their migrations. Most were small dams that powered mills or provided water for canal systems. Large hydroelectric dams were constructed on the Susquehanna from 1904 to 1932. These dams prevented migrating fish from reaching their historic spawning sites.

photo-PECO Energy

Conowingo Dam spans the Susquehanna River about six miles below the Pennsylvania-Maryland border and 10 miles above the mouth of the Susquehanna River at the head of Chesapeake Bay. PECO Energy built the river's first fish lift at Conowingo in 1972 and a second lift in 1991.

photo-Lou Kauffman

Over the course of a lifetime, migratory fish, like this hickory shad caught below Conowingo Dam in Maryland, will have covered thousands of miles, swimming as far north as Maine and Canada, and as far south as Florida.

As the economy boomed, so did the population. Communities along the Susquehanna and Delaware rivers flourished in the mid-1800s. Larger populations produced more wastes. Often, these wastes were diverted into the nearest waterway. Eventually it all ended up in the larger river systems.

So bad was this pollution on the lower Delaware that it formed a barrier to fish migration. This slug of bad water consumed the oxygen dissolved in the water. It formed a barrier through which no fish could migrate. There are records of this block dating back to the late 1700s.

Restoration efforts

Efforts to restore migratory fish were initiated as early as the mid-1800s. The Pennsylvania Commission of Fisheries, now known as the Pennsylvania Fish & Boat Commission, was formed in 1866. Governor Andrew Curtin appointed Colonel James T. Worrall as the first commissioner. Commissioner Worrall had one year and no budget to formulate a plan to restore runs of migratory fish to the Susquehanna River.

Early efforts concentrated on three strategies: Fishing regulations, stocking of young fish and fish passage. Fish ladders had been required on dams by Pennsylvania law since 1835. When the Holtwood hyrdoelectric dam was constructed in 1910, two ladders were constructed. The ladders were crude and ineffective, because little was known about shad, their habits and needs. Later, dams were not required to construct ladders, because it had not been shown that shad would use them. However, payments were made to the Fish & Boat Commission by the owners of these dams each year in lieu of fishway construction.

Fishing was regulated, but regulations were difficult to enforce. Millions of young shad were stocked from the Columbia hatchery in the late 1800s. Despite these efforts, shad runs on the Susquehanna River and Chesapeake Bay continued to decline.

Delaware River runs

American shad runs in the Delaware River were poor or nonexistent for most of the 19th and early 20th century. The water quality block prevented most of the fish from entering the non-tidal portion of the river. Runs would get infrequent breaks, when water flows and temperatures resulted in the block forming after the runs.

However, in the 1970s new water quality laws and regulations were put in place. This change in water quality signaled the turnaround for the Delaware. The construction of sewage treatment plants is credited with a large part of the cleanup. Once water quality improved, runs of migratory fish returned to the Delaware and its tributaries.

Revival of shad restoration efforts

American shad restoration efforts increased in the 1960s. American shad stocked in the Pacific Coast's Columbia River a few years earlier began using ladders at Columbia River dams. If shad were passing these dams, couldn't they pass those on the Susquehanna River?

Even though fishways weren't built when most of the dams were constructed, dam owners could be required to build them to keep their plants generating electricity. Studies were conducted to determine whether shad restoration could be accomplished. Because so much in the basin had changed since shad swam there, detailed analysis of habitats was conducted. In addition, research on fish passage was conducted.

This resulted in the construction of a fish lift at Conowingo hydroelectric dam in 1972. The lift was designed to collect fish that were trucked to a site above all the dams on the lower river. From 1990 to 2000, fishways were constructed at all the hydroelectric dams on the lower Susquehanna River, including another larger fish lift at Conowingo. Fishways were also constructed at dams on the Schuylkill and Lehigh rivers, tributaries to the Delaware River. American shad are the target species for restoration, but other migratory fish use these fishways.

Shad stocking research was also conducted. Young shad fry would be stocked above blockages in the river and then monitored for their return. For years, the majority of American shad returning to Conowingo Dam were stocked three to five years earlier by the Pennsylvania Fish & Boat Commission.

Striper decline

The decline of striped bass stocks is a more recent event. That isn't to say that they benefited at the time shad stocks were declining. Commercial landings of Atlantic Coast striped bass ranged between eight and 14 million pounds from the early 1960s to the mid-1970s. For many commercial and recreational anglers, the 1970s were boom times. The resource appeared endless. But Chesapeake Bay stocks declined steadily in the 1970s. A large portion of the Atlantic striped bass population comes from stripers spawning in the Chesapeake Bay. In response to these declines, the U.S. Congress passed the Atlantic Striped Bass Act in 1981. This act funded extensive studies to learn more about the causes of striper declines on the Atlantic Coast.

Restoration efforts focused on regulating commercial and recreational fishing. Additional studies of movements and population dynamics were also funded. Stocking young striped bass was also an important part of striper restoration in the mid- to late 1980s.

Major decisions on the management of Atlantic Coast striped bass and their restoration are made by the Atlantic States Marine Fisheries Commission (ASMFC). The Pennsylvania Fish & Boat Commission and 14 other coastal states comprise the ASMFC. ASMFC was formed in 1942, through an interstate compact, which was approved by Congress.

The U.S. Congress passed the Atlantic Striped Bass Act in 1981. Striped bass restoration efforts focused on regulating commercial and recreational fishing.

By 1890, more than seven million pounds of Atlantic sturgeon were landed commercially on the Atlantic Coast. Fish were harvested before they could reproduce. It wasn't long before the entire population crashed.

top photo-Dave Miko; bottom photo-Art Michaels

Managing migratory fish is a complicated biological and political feat. A fish that is one day caught and released by an angler fishing near Philadelphia may be caught days later by another angler fishing off Cape Cod, Massachusetts. The importance of state and federal partnerships to protect and manage these resources cannot be emphasized enough.

Two hundred years ago, migratory fish born in Pennsylvania were sold in markets in Philadelphia. Today, they are in demand the world over. Asian markets continue to grow, placing great pressure on eels and other Atlantic Coast fish.

Why restore the fishes?

Migratory fish are important members of the Atlantic Coast ecosystem. They are either important food items for other, larger fish, or they are top predators themselves. Restoring these fish and their important freshwater habitats benefits the entire coastal ecosystem.

Beyond restoring the biological legacy of our rivers, Pennsylvania and other states benefit economically. Sportfishing on the Delaware River generates $3 million in economic benefit. Estimates for the potential economic benefits of fishable runs on the Susquehanna are 10 times higher than that amount.

Commercial fishing for American shad and striped bass is also important to coastal states. According to ASMFC, the commercial landing of American shad in 1997 was valued at more than $1.2 million. Striped bass landings in that same year were valued at more than $8.9 million.

Thousands of hours and millions of dollars have been invested in restoring American shad and other migratory fish to Pennsylvania's waters. We see the return on that investment, but again these fisheries are pressured by forces outside the Keystone State. The future of these fisheries resources (and those that depend on them) depends heavily on our ability to learn from history, and we are doomed if we don't.

For more information

· Pennsylvania Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000; check the Commission's web site at www.fish.state.pa.us for updates on counts at fish passages on the Susquehanna and Delaware rivers.

· *Migratory Fish Restoration and Passage on the Susquehanna River*, a publication detailing restoration efforts, is available free of charge by writing to the Commission address above.

photo-Gerald Almy

Seven Top Lures for Bluegills

by Gerald Almy

Most sunfish are caught with live bait, and it's definitely hard to top a red wiggler, earthworm or cricket for consistency. The 'gill is also a superb fly rod quarry, snatching rubber spiders off the top with gusto and nailing wet flies and nymphs slow-crawled a few feet beneath the surface. But bluegills are also great fish for the ultralight lure fisherman. They're more than willing to take a variety of artificials, they're hard fighters on light or ultralight spinning tackle, and they're swarming in the shallows right now. Bluegills are also prolific enough that they can be harvested without guilt.

And that brings up another plus of bluegills. They're found in every region of Pennsylvania, usually inhabiting dozens of waters in each county (often hundreds if you count farm ponds). In fact, there is probably no gamefish more abundant in the Keystone State than the humble bluegill. They're found in rivers, most streams that are too warm for trout, virtually all ponds, and most lakes and impoundments. These latter waters are often particularly good choices, because larger, more glamorous fish like walleyes and bass tend to draw the lion's share of fishing pressure in the big lakes, while bluegills are all but neglected.

photo-Gerald Almy

With the right tackle and lures, catching at least a few sunfish is almost a certainty any day on the water. When you find their favorite hangouts, landing dozens is often possible. How many other gamefish can you make that claim about?

During late winter and early spring, bluegills hold in deep water over structure such as humps, creek channel dropoffs, stump fields, depressions in the lake floor and points. As water warms in April and May, the fish head for shallower water for three reasons–water temperatures are warmer, food is more abundant there, and this is where spawning will take place.

Cast to any cover you see, such as brushpiles, rocks, grassy banks, points, logjams, weedbeds and shoals in depths of two to eight feet. Concentrate on backwater bays, coves and the shallow ends of ponds. In rivers, fish slow pools, side eddies and sloughs off the main current.

As waters reach spawning temperature (around 67 degrees), focus on likely bedding areas with a sand, clay or gravel bottom. You can sometimes spot the actual bluegill beds, which appear as 12- to 24-inch circles fanned out on the bottom. Or you might see the fish themselves hovering, suspended in large schools in thin water. Mating is often heaviest around the full or new moon in May, June and July.

If you can't find the bluegills schooled on beds, probe cover nearby in the shallows for scattered fish. If that doesn't produce, drop back slightly deeper and work six- to 18-foot depths near structure such as dropoffs, humps, ledges and deep points.

Now that you've reviewed where to find 'em, consider these top seven offerings for bluegills:

1. Jigs. You can separate this group into soft plastic-bodied lures (often called grubs) and traditional jigs (with hair, synthetic or marabou dressings). However you want to categorize them, these artificials are superb for bluegills. In fact, if forced to choose one spinning lure for all sunfishing, it would be hard to top a leadhead with soft-plastic dressing.

Even though curly, wavy tails are good for bass and other species, you'll usually draw more strikes and solid hookups from bluegills with short, stubby split or single tails. They are compact and easy for sunfish to get in their small mouths, and the action is more subtle, typical of the insects bluegills feed on. Curly, fluttering tails are more minnowlike in appearance and sunfish really don't feed too heavily on baitfish. From a practical standpoint, the longer tails also tend to cause short strikes without solid hookups.

Manufacturers make many brands and styles of small grubs. Experiment with several kinds or even make your own, if you choose. Good colors for grub bodies include smoke, motor oil, pumpkinseed, chartreuse, red, green-and-black-striped, orange-and-brown-striped and white. The jighead, which can weigh anywhere from $^1/_{64}$-ounce to $^1/_8$-ounce, can be natural lead, black, brown or pink. If you have to work through thick cover in the water you'll be fishing, weedless versions are sometimes best. And even though soft-bodied jigs are usually best, it pays to keep a few traditional jigs with hair or marabou dressings on hand–just in case the fish prove finicky.

Cast leadheads to fish on beds, shallow cover or deep water hangouts, let the lure sink to the level of the quarry, and then begin a slow, steady retrieve. Pausing occasionally can be effective, but avoid hopping or twitching the lure. This usually looks unnatural and spooks more fish than it at-

photo-Gerald Almy

tracts. If fish want a very slowly moving lure, rig a small float a few feet above the offering to keep it from getting hung up.

2. Carolina-rigged plastics. A jig on a leadhead is usually the first lure I turn to, but sometimes a miniature Carolina rig is even more productive. You'll also take some surprisingly large bass with this setup, so be ready! Rig a sliding or egg sinker of $^{1}/_{8}$-ounce to $^{3}/_{8}$-ounce ahead of a barrel swivel and bead, with the lure trailing 18 to 48 inches behind. Alternately, you can simply use one large round splitshot ahead of the offering. A miniature plastic worm in the two- to four-inch range with prerigged hooks, or a single exposed hook, is one good choice for the offering. So is a thin grub, hooked lightly through the head, just $^{1}/_{8}$-inch in from the tip, on a size 6 to 10 short-shank bait hook. Having the lure separated from the sinker and fluttering almost weightlessly behind it makes this setup especially appealing to skittish fish.

3. Spinner-jig combos. Sometimes in stainy or cold water a jig-and-spinner combo works better than a plain jig. The extra flash from the small blade attracts lethargic or reluctant fish and draws the quarry's attention if the water is cloudy. Fish them slowly and smoothly or with occasional slight twitches to make the blade flutter. Both soft-plastic and hair or feather dressings work, as long as you make sure the offering is small and compact enough for a bluegill to take fully in its mouth.

4. Spinnerbaits. This is another way to combine a jig or grub and a spinner, using the safety-pin type arrangement. These lures are classic offerings for bluegills and work particularly well in streams and rivers. Colorado blades are best and good colors are black, smoke, pumpkinseed, black/green striped, yellow and chartreuse. Weights can range from $^{1}/_{8}$-ounce to $^{1}/_{32}$-ounce. A steady retrieve draws the most takes, but try pausing occasionally if fish are in deep water and prove reluctant to strike.

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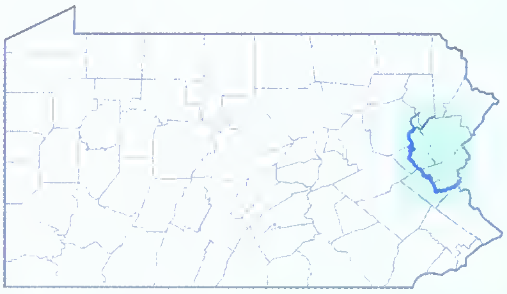
5. Mini-crankbaits. It may seem odd to throw crankbaits at bluegills. In the sizes bass and walleye anglers normally use, it would indeed be a strange thing to do–and not very productive. But several companies make miniature crankbaits that are small enough for a bluegill to want to attack. Imitating hellgrammites, crickets, grasshoppers and other "bugs," some of these lures are surprisingly realistic and draw hard takes from hungry 'gills. A few are sinking versions good for deep water or suspended fish. Others dive on the retrieve and float at rest. Choose the smallest sizes in natural colors to draw the most strikes.

6. Soft-plastic insect imitations. These offerings are soft enough to feel like a natural bug in a fish's mouth and extremely real-looking. They're often impregnated with scent attractants, too, or you can spray them on to add this appeal. Some come pre-rigged with hooks. Others you impale yourself on a size 6 to 10 hook.

These lures can be fished with just a tiny splitshot over beds or near cover. Sometimes it pays to suspend them beneath a float and let them dangle temptingly so the scent spreads out and wary fish move in to nab them. Add a slight twitch now and then, and slowly retrieve and cast to a fresh spot if no takes come after a few minutes. In streams cast up and across, working them down through slow pools and into undercut banks and swirling back eddies and sloughs, both with and without a float.

7. Spoons. Most people think of spoons as pike and bass lures, but small versions of these wobbling chunks of metal can be effective on both lake and river sunfish. Cast to cover or beds and retrieve them just fast enough to make them undulate seductively. Gold, green, red/white, silver and black are good colors. The spoons should measure just one inch to 1 $^{1}/_{4}$ inches long.

For fish holding in deep areas, slab spoons that have little or no curve built into the body are good choices. These offerings should be vertically jigged. For fish in winter and also in summer after spawning is complete, position yourself above the quarry or likely structure in deep water. Then lower the spoon to the appropriate level and jig it slowly and rhythmically up and down with pauses between lifts. The majority of fish will strike on the drop, so be sure to lower the lure just fast enough that it can flutter down freely while keeping excessive slack out of the line. If a bluegill is nearby, a thumping take is almost guaranteed.



Lehigh River Water Trail

by Sue Ann Alleger

There are 27 bridges across the Lehigh River. They join communities and businesses, and in cars, buses and trucks they carry workers, shoppers, students, firefighters and police. This travel crisscrosses a shimmering band of water that has played a great role in moving people and things before those bridges were imagined. In the mountains of the Lehigh River's northern reaches, the river surges as boiling whitewater. The river cuts a steep gap through Blue Mountain and enters the Lehigh Valley. The river courses through the Lehigh Valley, home to nearly three-quarters of a million people and growing at a substantial rate every year. This river holds many surprises, including its newest-a water trail.

A modern water trail is defined as a recreational waterway on a river, canal, lake or ocean accessible at specific points for day or overnight use by the boating public accompanied by an ethic of low-impact use and stewardship of the land. Many of these routes are traditional or historic routes of commerce and travel. The increased interest in water trails in recent years has focused our attention on routes blessed with fine scenery, productive fisheries, exciting water conditions and other attractions. The Lehigh River offers all these things as well as nearness to the Lehigh Canal and its historic evidence of the active and productive canal-era and industrial-era years.

Along most of the Lehigh River, the bank allows easy access—the slope is moderately steep, requiring a careful descent and a brisk scurry to scale back up the bank. Many anglers' paths mark the banks, and the summertime brings shouts and splashes from its shores. Because this river and its developed canal were privately owned for so long, very

photo-T.L. Gettings, Wildlands Conservancy

little development is evident along its shores. Railroad tracks have lined one or both sides for decades. You could drive alongside the river and not know it is there because of the thickly tree-lined shores.

Several components have come together in recent years to help the Lehigh River Water Trail become a reality. The Congress established the Lehigh and Delaware Canal National Heritage Corridor Commission to preserve and enhance the unique historical, cultural, environmental, recreational and visual heritage of a geographic corridor from Wilkes-Barre to Bristol. The D&L Commission, the Department of Conservation and Natural Resources and the Wildlands Conservancy in Emmaus formed a partnership to gather information and bring together interested parties, such as county and municipal representatives, associations and livery services.

It takes a drop of water 24 hours to travel the distance of the Lehigh River to the confluence with the Delaware River, a distance of about 103 miles. In a boat, it would take several day trips. Nineteen access points and two river/canal loops have been identified and reviewed as excellent candidates for this water trail. It is possible to get on and off the river at these 19 spots and to stop for lunch and stretch your legs with a walk on adjacent walking trails and towpaths at all of them, or visit historic sites within walking distance at many of them.

This water trail and adjacent hiking trails are still being developed. Several locations need only signs to complete their readiness for use; others need some improvement as well as signs. Several property owners have already expressed interest in those improvements. Work on a waterproof, durable and descriptive river map has just begun–a map designed to accompany a boater on the water to point out obstacles, accesses, historic sites and facilities.

photo-T.L. Gettings, Wildlands Conservancy

The headwaters of the Lehigh River start in desolate wetlands. The headwaters are captured in the Francis E. Walter Dam and hurled through the Lehigh Gorge, an area steep in terrain and wild in nature. Its drop decreases as it reaches Blue Mountain and the Lehigh Gap. As it flows toward the heart of the Lehigh Valley toward its confluence with the Delaware River and the Delaware Canal State Park, it becomes a lazy float. These southern river reaches can best be described as a "metro-wilderness." The wooded and surprisingly wild corridor passes through the densely populated suburban and urban communities surrounding and including the cities of Allentown, Bethlehem and Easton. Yet, it is a home to herons, deer, ospreys, turtles, beavers and more. The Lehigh Gorge State Park, the Fish & Boat Commission, and several cities and municipalities and associations have provided and maintained accesses at several spots along the Lehigh River and Lehigh Canal.

History of the Trail

The D&L Trail is a linear, multi-use trail extending 180 miles from Wilkes-Barre to Bristol, PA. It is the spine of the Delaware and Lehigh (D&L) National Heritage Corridor, located in eastern Pennsylvania. The foundation of the D&L Trail is the extraordinary early 19th century transportation system of mountain railroads, rivers, dams and canals, devised to move anthracite coal from mine to market. This is where America's iron, cement and slate industries were born. Indeed, this transportation route served as the birthplace of America's Industrial Revolution. The D&L Trail has linked communities for over 400 years of historical, cultural, industrial, environmental and recreational growth. Not only are 100 municipalities in five counties linked by the trail system, it also offers historic sites, mountains, scenic rivers, green valleys, unique natural areas and remnants of early industries.–*SAA.*

Lehigh Gorge State Park operates and maintains the three northern points at White Haven, Rockport and Glen Onoko, all on river right (heading downstream). Only intermediate or expert boaters in rafts or whitewater-worthy craft should attempt this section. Carbon County owns and operates the access at Jim Thorpe on river right. Exiting at this point introduces visitors to the borough of Jim Thorpe with its shops, restaurants and historic sites such as the Packard Mansions, the Opera House, the Switchback Gravity Railroad National Heritage Trail and D&L Corridor Landing at the Carbon County Visitors Center. The river settles down somewhat at this point, but several dams, both intact and dilapidated, must be carefully portaged between here and Allentown.

The Lehigh Canal Recreation Commission owns the unmarked and undeveloped access points at Stone Beach in Lehighton, Parryville and West Bowmanstown. Boaters can stop at Lehighton, cross the river on the automobile bridge and hike along the Lehigh Canal towpath. The towpath can also be reached farther downriver at the Parryville access point on river left. The Lehighton and West Bowmans points on river right connect to the abandoned railroad right of way that will be developed soon as the D&L Trail. The Walnutport Canal Association is improving an access in partnership with the borough of Walnutport in the Walnutport Canal Park on river left. There one can visit the renovated lock and locktender's house as well as hike on another section of improved canal towpath. This is also the location of a potential river/canal loop.

The Treichlers Bridge and Laurys Station access points sit alongside the soon-to-be-developed D&L Trail. Keep your eyes open; boaters must exit the river directly after the Route 329 bridge in Cementon to portage the Cementon Dam. The Borough of Northampton, on river left, owns and operates an access point just beyond the dam. This access connects to the Canal Street Park Trail. Along this section of the river, development is visible more frequently beyond the trees of the riverbank. Off to the right you can see the kiln smokestacks of the Saylor Park Cement Industry Museum.

Farther downriver on river left, the Borough of Catasauqua has expressed interest in developing an angler's path leading to the river. Stopping here allows for lunch, a walking tour of historic homes or a visit to such landmarks as the George Taylor home.

Although the riverbanks are still thick with trees, the Allentown city buildings start to come into view at this point. The Fish & Boat Commission's Kimmett's Lock Access and an access in Allentown, Canal Park Access, are along river right. Boaters need to be alert here to get off the river at the canal access and avoid the Hamilton Street Dam. But there's no need to stop paddling–the Lehigh Canal is watered for a short distance–and you can carry your boat a short way and safely reenter the river below rapids downriver of the Hamilton Street Dam.

One would think the city is behind you, only quiet tree-lined banks and wildlife beyond. Yes, quiet, yes, tree-lined and yes, wildlife, but no, the city is not behind you–it surrounds you. In fact, this section of the river is the start of the journey through Bethlehem and Easton. The river flows gently here and soon the city of Bethlehem comes into sight as well as the skeletons of the once massive Bethlehem Steel Plant. Along Sand Island, on river left, plans are underway for an improved river access point on the western end of the island. The river and canal between Allentown and Bethlehem have recently experienced a lot of boat and bicycle activity by participants in the Wildlands Conservancy's Bike and Boat Program. An improved canal towpath that extends from Allentown to the Delaware River can be reached at any of the planned access points along this section.

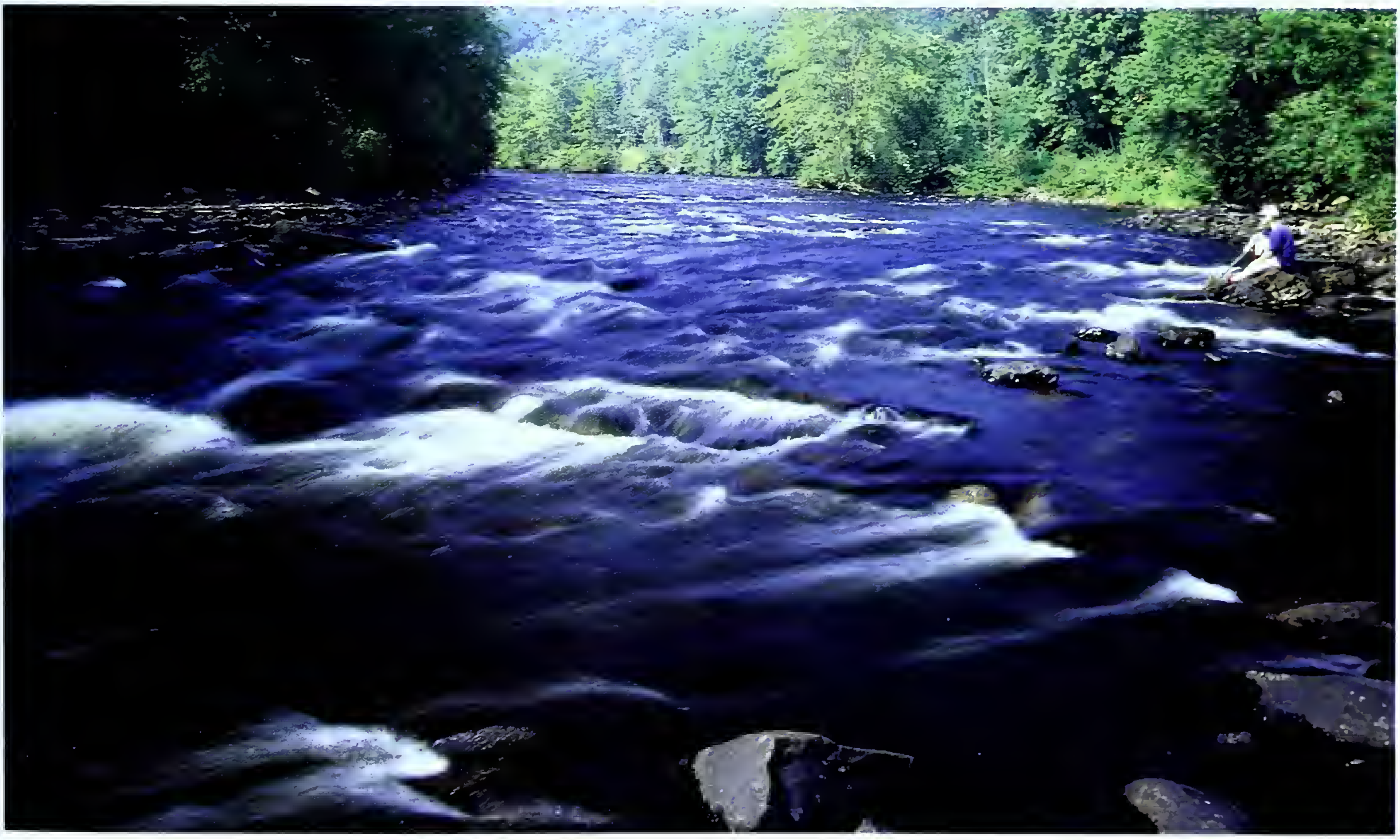
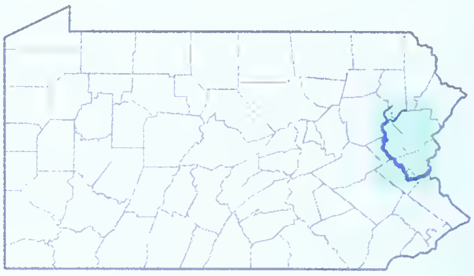


photo-T.L. Gettings, Wildlands Conservancy

On river left, in Freemansburg, a locktender's house and rebuilt mule barn provide a pleasant lunch spot. Just beyond Freemansburg, Bethlehem Township has plans to develop a fisherman's path on river left. Hugh Moore Park and the locktender's house and canal boat replica are located just upriver from the Glendon Dam. River travel is interrupted here by the dam, but Hugh Moore Park is a fine spot on river right for access from river to canal and back to the river. The final access point is at the confluence of the Lehigh and Delaware rivers in the jurisdiction of Hugh Moore Park. From this spot, it is a short portage to the water of the Delaware Canal and Delaware River. All you need is a few more days of serenity to complete your float to Delaware Bay!



Sue Ann Alleger is the Water Trails Specialist at Wildlands Conservancy. Wildlands Conservancy is a non-profit, member-supported organization dedicated to land and river preservation and environmental stewardship through education. The Conservancy can be reached at: 3701 Orchid Place, Emmaus, PA 18049; (610) 965-4397.

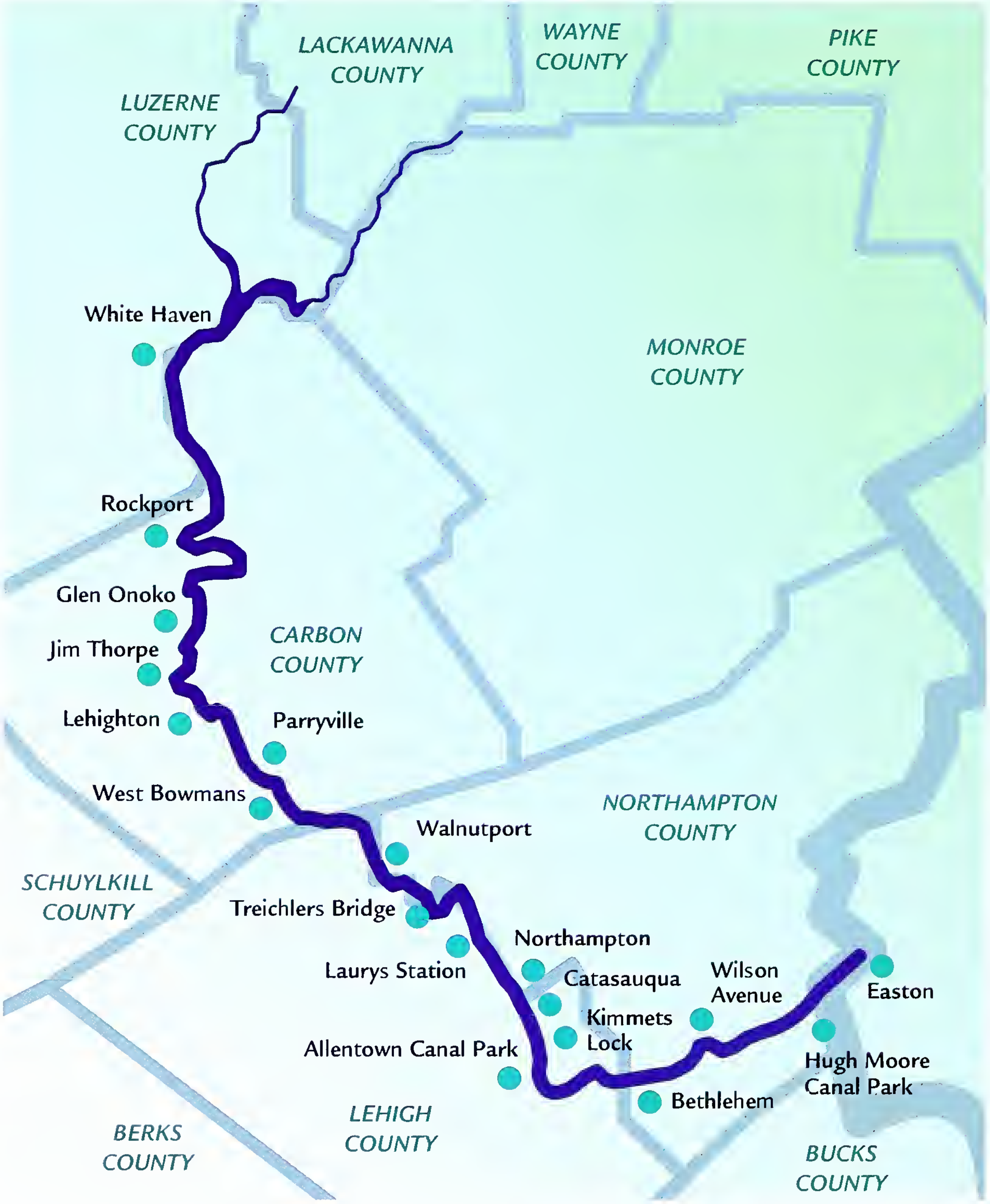


illustration-Ted Walke

Stewards

Wildlands Conservancy established a newly created D&L Trail "Tenders" Program. It is designed to bring together groups, corporations, Boy Scouts, Girl Scouts, landowners and individuals to celebrate and care for their trail as a premiere outdoor recreational quality of life. Regular trail maintenance includes brush cutting, picking up litter and debris, maintaining historical structures and repairing amenities.

Since the beginning of the program in April 1999, 750 people have accumulated close to 5,000 hours as tenders. These volunteers are dedicated to maintaining, preserving, promoting and enhancing the D&L Trail. Trails Specialist Sherry Petrilak says, "It is a chance to meet people, enjoy the outdoors, give back to your community and have fun! We designed the program to be flexible and allow Tenders to participate at their comfort level." *-SAA.*

Geographical Information Systems (GIS) for Fish Conservation

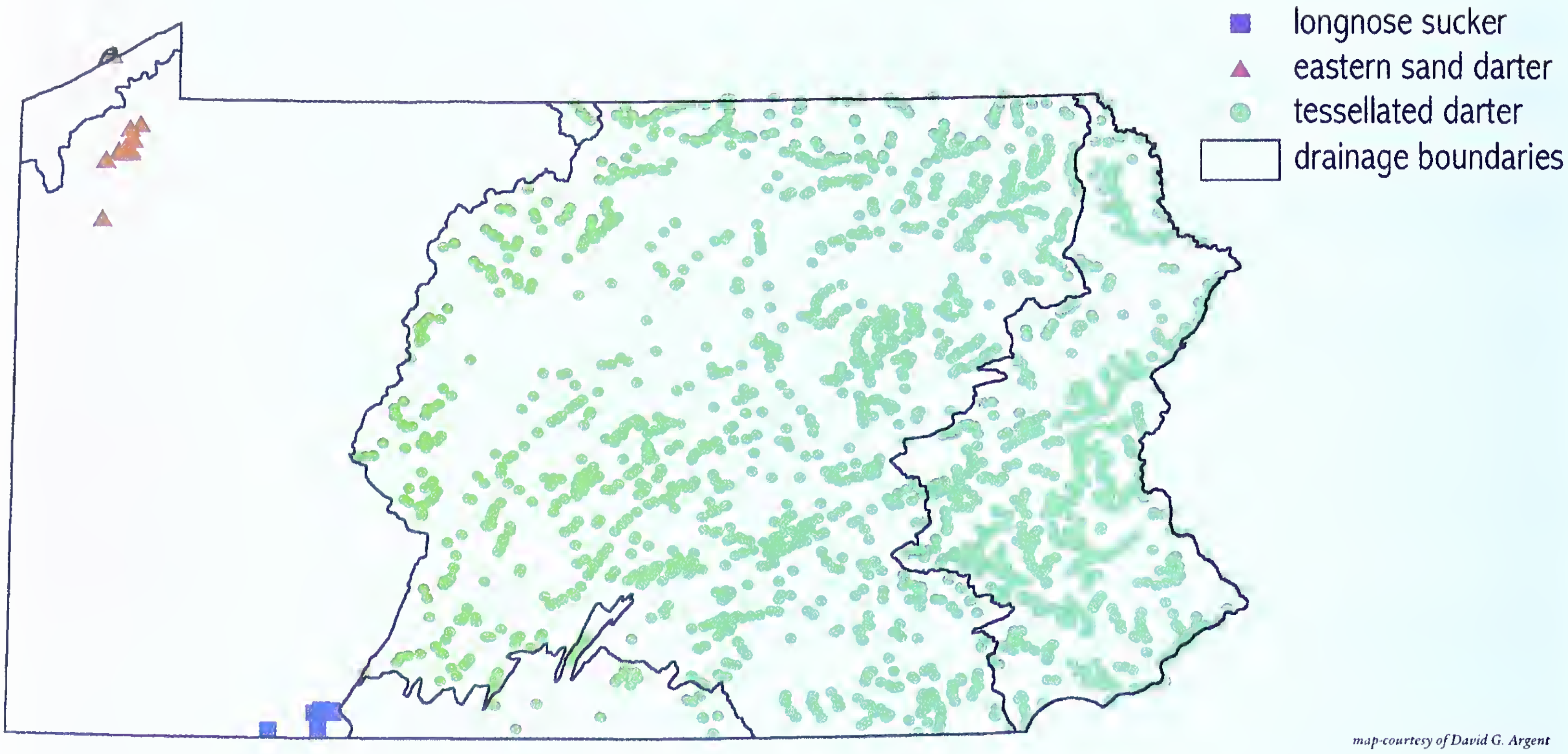
by Karl Blankenship

Nearly 35,000 years ago, Cro-Magnon hunters drew on cave walls pictures of the animals they sought. Along with the drawings, they drew track lines that appear to depict migration routes, as well as marks that seem to be tallies of animals using those routes.

This helped the "cave men" keep track of when and where they would have the best chance of finding the greatest number of animals. Today, scientists have combined that stone age idea with high tech computers and have come up with something they call the "geographic information system"–or GIS. Increasingly, scientists and others are turning to GIS programs to help keep tabs on a wide range of important resources–like fish.

Recently, scientists at Penn State fed more than 22,000 individual fish-survey records–each identifying a particular species and where it was found–into a GIS program. The idea was to judge the status of a species based on its abundance and distribution. The result of the analysis shows that 35 percent of the state's 159 fish species are in peril. Some were even worse off: The deepwater sculpin, silver lamprey and spoonhead sculpin were all extirpated from the state.

To reach their conclusions, the scientists did what Cro-Magnons did tens of thousands of years ago. They took databases of information and combined them with graphic files to present information in a mapped, or geographical, form. On their



map courtesy of David G. Argent

cave walls in what is now France, the hunters used information about the kinds and numbers of animals migrating–a database–and combined it with the migration route–the geographical element.

The main difference is that today's computers allow scientists to use huge amounts of information. Before, the notion of trying to locate 22,000 individual records on stacks of paper maps was unimaginable.

"When we were manually overlaying maps, it was really laborious," said Robert Carline, a Penn State professor of fisheries science. "A lot of things we didn't even think about doing. This technology has allowed us to organize and analyze data in ways that we were never able to do in the past."

"Obviously, objective data is what is most likely to stand up in court, and it is most likely to be persuasive or convincing to a third party who may not know much about a species," said Andrew Shiels, the Fish & Boat Commission's Nongame and Endangered Species Unit Leader. "If you can keep your data as unbiased and scientifically obtained as possible, that strengthens your argument."

A GIS can display any information as long as it can be organized geographically–or mapped. But a GIS can also display lots of mapped "layers" at once, sort of like a stack of transparencies. Instead of looking at distribution information for, say, the mountain madtom, scientists can look at many layers–or species–at once. When they do, they begin to see new insights: As they looked at the fish information, for instance, it became clear that some watersheds were home to multiple rare species.

That knowledge could be used to help target programs, such as stream restoration projects, toward "hot spots" with several threatened or endangered species.

"We're able to identify watersheds with high species diversity and rank them in terms of those that really merit protection," Carline said. "That would be a valuable piece of information for decision makers, in terms of allocating public funds."

That is just the beginning. Different types of information can be added as new layers. Scientists, as part of a project supported by the Wild Resource Conservation Fund and the Fish & Boat Commission, are now putting more information about land use and geology into the program, which they hope will allow them more precisely to identify the conditions in which particular fish are found. By looking at the GIS, they could quickly see if a species is found only in, say, streams with steep slopes in oak forests with limestone geology.

Taking that a step further, they should also be able to identify where rare fish should be found–based on habitat conditions–but are absent. New monitoring efforts could begin in those areas to see if the fish are present and have merely been overlooked. That type of information could be used someday to identify potential sites where rare species could be reintroduced to rebuild and expand the population, Carline said.

Cro-Magnon's form of GIS may have helped set him apart from many other prehistoric hominids in an important respect–he survived, while many others went the way of the Neanderthal. Scientists hope the blend of his stone age concept with high tech will help today's fish and other resources survive as well.

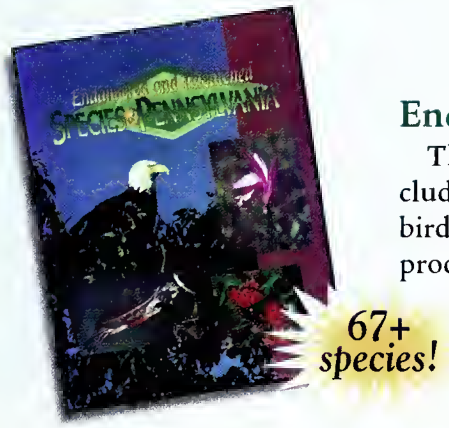
Products and Publications

Guide to Public Fishing Waters and Boating Access

This 96-page book, 5½ x 8½, lists by county the locations of Pennsylvania's public accesses with information on each access's services. Also listed are brief driving directions to each access. The book also lists Pennsylvania public fishing waters by county, including miles for flowing waters and acreage for impoundments and lakes, species available and nearest towns.

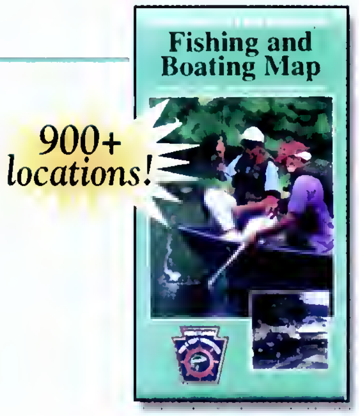
Pennsylvania Amphibians & Reptiles

This 161-page, 5½ x 8½, full-color book lists Pennsylvania's salamanders, frogs, toads, turtles, lizards and snakes. Each animal's account includes details on general characteristics, identification, range, habitat, reproduction and food. Range maps and full-color illustrations and photographs help anyone identify each species.



Endangered and Threatened Species of Pennsylvania

This book is 80 full-color pages and measures 8½ x 11. The book includes details on Pennsylvania's endangered and threatened invertebrates, birds and mammals, fish, reptiles, amphibians and plants. The book was produced as a cooperative effort among the Fish & Boat Commission, Game Commission, DCNR Bureau of Forestry, and the Wild Resource Conservation Fund.



PFBC Fishing & Boating Map

The full-color folded map measures 37 inches x 22¾ inches flat. With the official Transportation Map, the map marks the locations of more than 900 fishing and boating accesses, lake and impoundment special-regulation areas, flowing water special-regulation areas, fish culture stations, universally accessible areas, Commission offices and pumpout stations.

Products and Publications

Pennsylvania League of Angling Youth 1980
Pennsylvania League of Angling Youth 1983
Pennsylvania League Angling Youth 1986
Pennsylvania League of Angling Youth 1987
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1993 Pennsylvania League of Angling Youth
P L A Y 1992
Pennsylvania League of Angling Youth 1995
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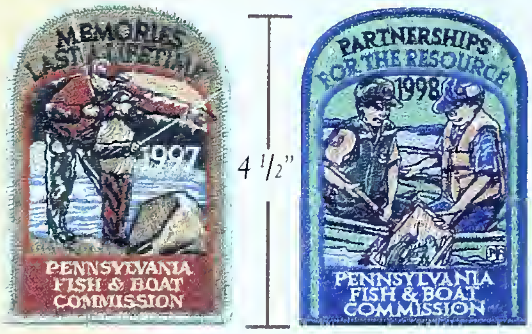
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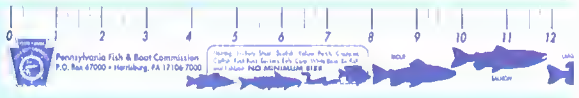
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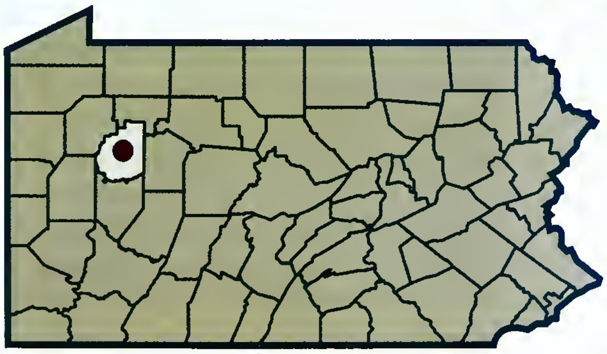
Clarion River Trout and Bass

by Jeff Knapp

The section of the Clarion River that flows near Ridgway, Elk County, to the headwaters of Piney Dam, Clarion County, provides Pennsylvania anglers with quality, under-used fishing for both trout and bass. This 52-mile stretch of waterway was classified as a Wild and Scenic River in 1996. Along this considerable length, only seven bridges span the river, half of which are on remote back roads.

photo-Jeff Knapp



By most standards, the Clarion River is big trout water, even the upper end. It doubles in size along this 50-mile-plus stretch from 80 to 100 feet wide near Ridgway to about 200 feet wide below Cooksburg.

Much of the country the Clarion flows through is public land. This includes state game lands, both state and federal forest land, and two state parks, Cook Forest State Park and Clear Creek State Park. Besides Elk and Clarion counties, the river also touches Jefferson and Forest counties.

The Western Pennsylvania Conservancy has been instrumental in purchasing a significant amount of property bordering the lower portion of this stretch of the Clarion. This land has, in turn, been sold to the Game Commission as an addition to State Game Lands 283.

The East and West branches of the Clarion merge to form the river's main stem in Johnsonburg. The Commission stocks both branches with trout.

Clarion River Trout and Bass

photo-Jeff Knapp

About 14 miles of the West Branch is stocked. A major flood control lake, East Branch Reservoir, sits on the East Branch. It's stocked between the lake and Johnsonburg. Water released from the mid-depths of the reservoir helps keep down water temperatures in the watershed below, even during the summer. One negative is that the East Branch of the Clarion has a history of acid mine drainage problems, primarily from a few tributaries that enter the lake.

According to Ron Lee, Commission Area 2 Fisheries Manager, one of the angling attractions of the Clarion River is the availability of quality-sized brown trout. As such, the Fish & Boat Commission recently classified an 8.5-mile section of the Clarion as All-Tackle Trophy-Trout waters. It extends from the confluence of the East and West branches down to the confluence of Elk Creek. This project is just upriver of the Wild and Scenic River section.

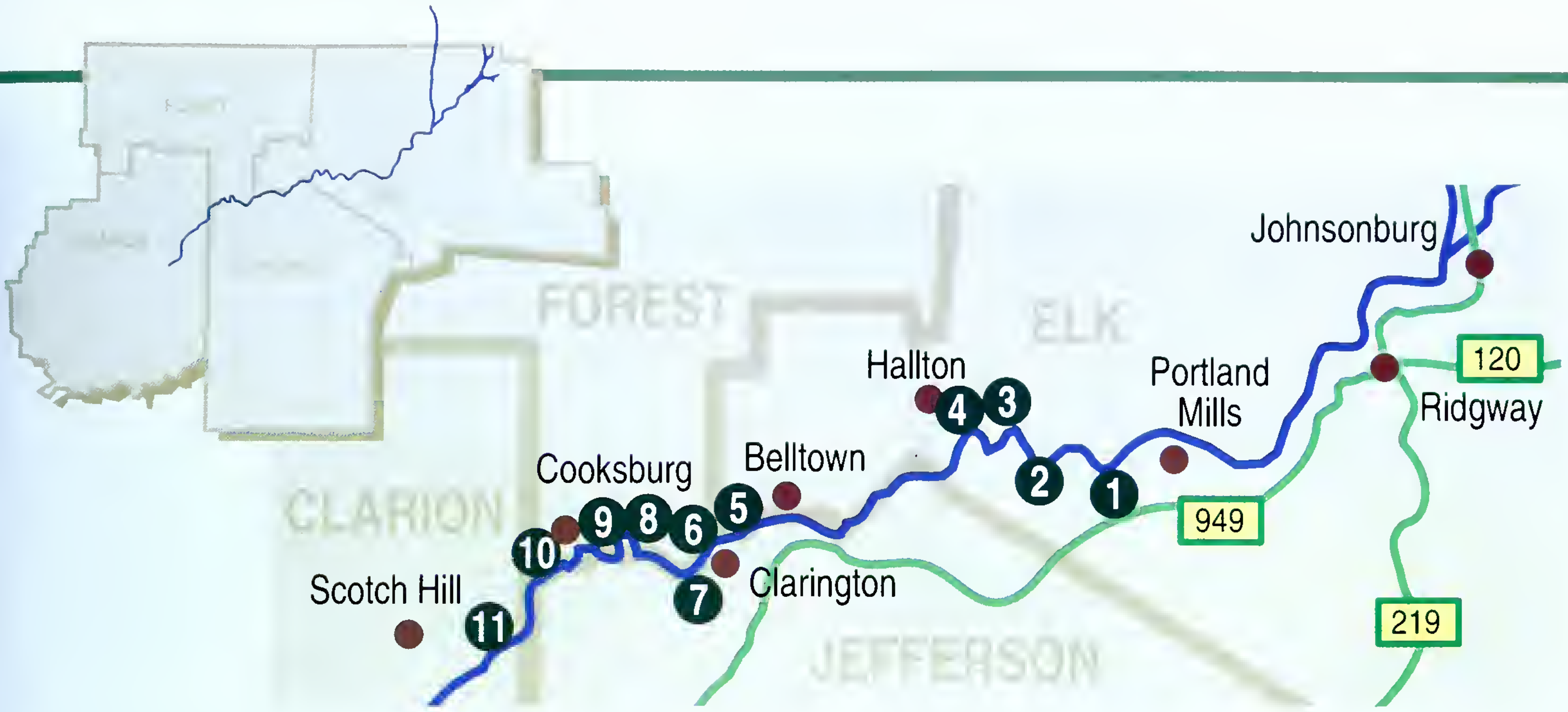
The Clarion River trout fishery is fueled primarily by two sources, fingerling stockings and catchables that are stocked in tributaries. From Ridgway down to Cooksburg, a distance of about 44 miles, the Clarion is stocked with fingerling trout. This section also has natural reproduction of brown trout. Fingerling stocking stops at the Route 36 bridge.

At one time, the stocking was comprised of both brook trout and brownies, but the Commission made some changes a few years ago in the program.

"We've been stocking since the early to mid-1970s," said Lee. "We found that, for the most part, all the brook trout would leave the main stem and go up all the tributaries. We had all these little brook trout in these tributaries. So we did away with stocking brookies and stayed with the browns. As a result, we have a brown trout fishery that's not high-density, but there are some quality-sized browns that show up."

Fingerling plants aren't the only source from which the Clarion gets its trout. Several stocked tributaries enter the river along this stretch. Some fishing pressure focused on trout can be seen at the mouths of these creeks. The streams not only furnish the river with an additional supply of trout, but they also help cool it, and neutralize the pollutants that remain in the river proper.

Even though the trout fishery on the Clarion isn't dense, the same can't be said of the smallmouth bass population. The habitat improves as one ventures down the Clarion toward Piney Dam, and good numbers of fish can be found throughout.



Canoeing the Clarion

One of the best ways to enjoy a Clarion River trip is by canoe. Several access areas along this way make it possible to do so. Canoe camping is also a popular activity, and can be combined with a fishing trip. Canoe rentals are available in Ridgway, Belltown and Cooksburg. Here's a look at the access areas. The numbers in parentheses are the distances downriver from Ridgway.

1. **State Game Lands 44, about a half-mile downriver from Portland Mills (11).**
2. **Arroyo Bridge, on the south side of the bridge (14.5).**
3. **Irwin Run (18).**
4. **Hallton (20.1).**
5. **Millstone (30.9).**
6. **Dark Hollow (31.5).**
7. **Clear Creek State Park (34).**
8. **Maple Creek, 0.1 mile south of Maple Creek.**
9. **Cook Forest State Park, 3.7 miles upstream of the park office (41.5).**
10. **Cooksburg, across from the post office (44.5).**
11. **Gravel Lick, one mile downstream from the Gravel Lick Bridge.**

Nine of these access areas are undeveloped. The access on SGL 44 is improved, with a nice parking area and a ramp of concrete slabs. The Irwin Run access, which is on Allegheny National Forest property, has been improved in recent years.

Understanding the habitat

The Clarion is big trout water, and the anglers who score consistently know how to read it. Understanding the habitat is critical to success.

"The fishery is habitat-oriented. If you find the good habitat, you'll find these big browns," says Lee. "In the Hallton area there's some good gradient and deep holes."

Both bass and trout can be found throughout this length, but Lee considers Hallton to be the transition area. Above Hallton, the better trout waters are found. The same is true for bass below Hallton.

Deep holes are eight to 10 feet deep. Though flowing through rugged country, the Clarion doesn't have any heavy whitewater. The average drop is about three feet per mile. Much of the river exhibits a typical riffle-run-pool relationship. The deeper pools hold the river's brown trout. Another key to finding the deeper water is to look for the steeper-dropping bank.

Access

Access to the river is decent from Ridgway down to Portland Mills, because SR 949 stays close to the south side of the river. Below that, T-314 swings in close to the river's south bank before crossing the river at Arroyo Bridge. The next piece of roadway along the river is SR 3002, from the Irwin Run access down to Hallton.

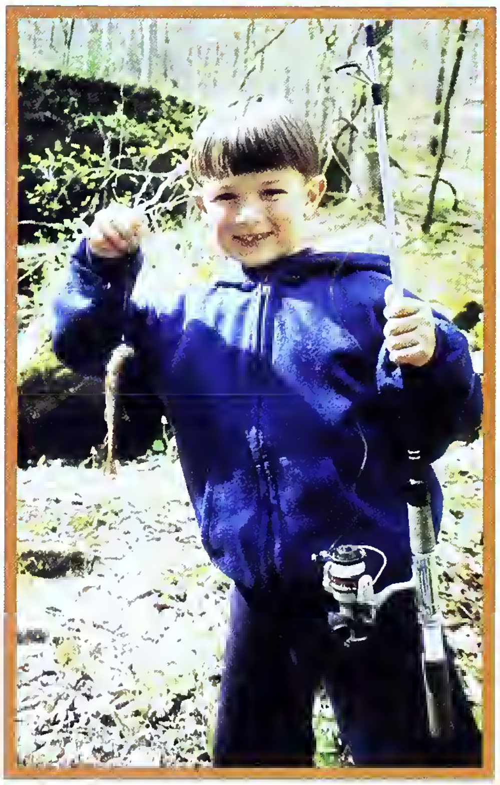
From Hallton to Cooksburg a secondary road parallels the north bank of the river. SR 949 again swings close to the river's south bank upriver of Clear Creek State Park. A few miles below Cooksburg a secondary road (SR 1001) crosses the Clarion at the Gravel Lick Bridge. This road parallels the river for a short distance along its south bank. The next eight miles or so go through one of the most inaccessible areas through which the Clarion flows. There are no roads on either side of the river. Old State Road dead-ends at the Clarion's south bank near where Blyson Run enters the river. This is just upriver from where the slackwater of Piney Dam starts to form.

More information on private campgrounds, motels and additional travel considerations can be garnered from the West Central PA Tourism and Travel Bureau at 800-348-9393, or e-mail information requests to: magicforests@ncentral.com.

Take a Kid Wild-Trout Fishing

by Don Feigert

When New Jersey Bob called and asked if he could bring his six-year-old son Bobby along on our annual early June trout-fishing excursion, that changed everything. Take a six-year-old trout fishing? Would walk-in trouting bore the boy or interest him? Did he stand any chance of success fishing the challenging tributaries of the Allegheny River near my northwest Pennsylvania camp?


photos-Don Feigert

I'd planned to take Bob Senior on long hikes up two local streams featuring home-grown wild brook trout and stocked browns and brookies. The stocked trout are carried upstream deep into the woods via fire trails closed to public vehicles but open to trout-stocking trucks.

Too much for a six-year-old, no doubt. I needed to devise a new plan. Where could we take a youngster, provide him with a true Pennsylvania trout-fishing adventure, and still hope he'd encounter enough action to grab and hold his youthful brief attention span?

We'll take him wild trout fishing, I decided. To a creek so small and secret that it doesn't have a name.

I know a little stream only six miles from my camp, only two miles from a heavily stocked, heavily fished high-profile trout stream. A creek so small a man can step across, a boy can jump across its width at almost every bend. Its name is lost with the ghosts of the Senecas who once roamed the hills and hollows of northwest Pennsylvania. Its watery course appears anonymously on good county maps, a squiggly line that cuts the center of a deep, steep-sided hollow rich with ferns, hardwoods, evergreens, boulders, deer, gray squirrels and wild turkeys. The stream holds colorful native brook trout four to seven inches long, a fish or two or three in every hole, vibrant wild trout always hungry to survive. They live in waters cold enough to shock your fingertips, in pools below slight riffles and tiny waterfalls, in a stream that drops and drops down a steep, rocky incline toward the Allegheny River.

When Bob and Bobby arrived at camp on Thursday afternoon, tense and restless from the six-hour drive and the anticipation of a long Pennsylvania weekend, that's where I'd take them, to my secret unnamed wild trout stream.

Bob's car edged up the camp driveway at just past two, and Bobby, slightly built but energetic, bolted out the passenger side door toward the camp front porch, where I sat sipping hot coffee in the cool, pine-scented riverside breeze.

"Let's go fishin'!" Bobby yelled, his medium-length light brown hair bouncing as he ran. "Let's go fishin'!"

I traded smiles with Bob Senior, his tall, trim form just now emerging from the car. "Well, I don't know," I said to Bobby as he came to a stop below me near the porch steps. "I guess that must be what you're here for."

An hour later the three of us trekked a deer path up a lonely hollow, the little nameless stream trickling below.

"What kind of fish are we going after?" Bobby asked.

"Pennsylvania wild native brook trout," I told him. "They're little fish, but they're special. Those trout living here means the land is good and the water is clean."

"Pennsylvania wild native brook trout," I repeated. "Remember that, Bobby."

Soon we arrived at the spot I'd chosen as our starting point: A mini-waterfall feeding a deep pool between two oversized undercut boulders.

Bob Senior rigged Bobby's gear and bait while I watched and waited for the magic of the first cast.

"I'll cast this for you, Bobby," he said, "but you're going to catch the fish, okay?"

Bobby nodded, exuberance and expectation shining in his eyes. His father slipped the bait into the current at the head of the pool and let it drift out of sight beneath the undercut boulder. A moment later he set the hook, and

the ultralight outfit bounced and quivered against the fight of a wild brookie.

"Here, Bobby, I think you've got one," Bob Senior said and handed over the rod. Bobby battled the little fish, its silver sides, darker back, orange belly and orange-tinted fins visible in the clear-water pool, its wild power dramatized by the bending rod and slashing surges on the monofilament line.

Soon Bobby held the fishing pole upright, the beautifully marked trout twitching in front of his face. "Pennsylvania wild native brook trout," I said as his father and I watched Bobby examine the catch, expression serious, eyes gleaming. I showed him how to pinch the trout's lower lip with one hand and slide the hook out with the other. Then I taught him how to release the fish gently, upright up-current in the stream.

"How come we don't keep him?" Bobby asked.

"Well, for one thing," his father answered, "he's not big enough. He's not legal size."

"And we don't need to eat him," I added. "We've got lots of food back at camp. We'd rather let him go back into the stream, where he'll live and grow and be strong. Who knows? Maybe we'll catch him again some day."

"If he gets bigger and we catch him again, can we keep him then?"

"Maybe," I laughed. "It's okay to keep and eat a fish once in a while, Bobby. But mostly we just keep them by taking pictures. They're more important to us, more valuable to us here in the stream than in our stomachs. Can you understand that?"

Bobby nodded. "Can we catch some more?"

Next morning we hiked a larger stream for two hours and caught a few bigger stocked trout, but we did not return to our special nameless creek at all during Bob and Bobby's visit. We explained that over-fishing wild trout in little streams stresses them and damages their health. You need to leave them alone much of the time. That was okay with Bobby. Over-fishing stresses the interest level of young boys, too, and a few hours of trout-chasing suited him just fine. We spent much of the weekend swimming, canoeing, playing wiffle-ball, incinerating marshmallows at nightly campfires, and generally delighting in the outdoors. I know Bobby had a great time. And I hope we hooked him into a lifetime of wild-trout fishing.

Canoes for Pennsylvania's Twisty Streams

by Cliff Jacobson

Pennsylvania has thousands of miles of twisty streams. These waterways are headwaters and tributaries of our main rivers, and they are relatively narrow with many twists and turns. They are ideal for canoes–the right kind of canoes. Here are some canoe rules and how to apply them to choosing the right canoe for Pennsylvania's twisty streams.

Rule: The shorter the canoe, the easier it will turn.

Canoes are displacement hulls, so the longer they are, the faster they run. You can compute the relationship mathematically by applying the over-simplified formula: Speed in miles per hour equals 1.55 times the square root of the waterline length, measured in feet.

Thus, an 18 $^1/_2$-footer peaks out at around 6.7 miles per hour. A 16-footer runs about 6.2 miles per hour. The difference is about eight percent, which is significant if you're paddling long distances or into a head wind.

But when you accentuate one variable (speed), you detract from another (turning ability). Invariably, the result is that the longer the canoe, the harder it is to turn. This quality can be a serious handicap on twisty streams.

The late Harry Roberts, former editor of *Canoesport Journal* magazine–an outdoor publication that was popular in the 1970s–was often quoted as saying: "You can learn to turn a fast canoe, but no amount of learning will make a slow canoe fast."

Yes, a good team can maneuver a long, fast canoe through a tight course, but it won't be easy. Or fun. Why drive a semi through a twisty course when a compact car is available?

Rule: More rocker means faster turns.

One-and-one-half inches of rocker is reasonable for a twisty stream canoe.

The upward curve of the canoe's keel-line is called "rocker." Generally, a canoe with lots of rocker turns easily and rises quickly to oncoming waves. But it's hard to hold on course (tracks poorly) and it's slower than a similar canoe with no rocker (see Figure 1).

Racers like a canoe with zero rocker–perhaps a hint of lift in the ends, that's all. Whitewater canoes should have severe rocker–three or more inches is common. One-and-one-half inches is reasonable for a twisty stream canoe that will also be paddled on larger, gentle rivers and lakes.

Rule: Beefy, well-rounded stems are the rule on a twisty stream canoe.

Thin, square ends break easily and they discourage turns.

The shape of a canoe's stems (ends) affects its ability to carve turns. Rounded stems encourage turns, while square stems act like rudders and tend to keep the canoe on course. Squaring the stems is an easy way to lengthen the waterline (and increase speed) of the canoe without increasing its overall length (see Figure 2).

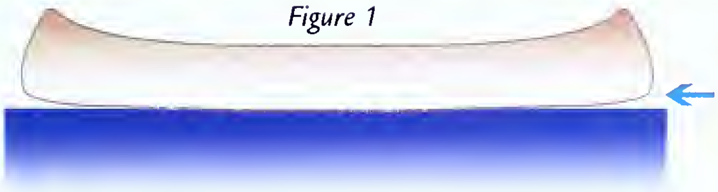
Square stems are fine for racing and lake travel, but elsewhere they're an abomination. The thin, jutting ends catch on rocks and break–and turns are something you must plan.

Rule: Avoid canoes with keels!

The exceptions are aluminum canoes, which are formed in two pieces and don't come any other way. A twisty stream canoe should not have a keel!

An external keel will make any canoe track (hold its course) better. However, it will also catch on rocks and en-

Figure 1



About 1 ½ inches of rocker is reasonable for a twisty river canoe.

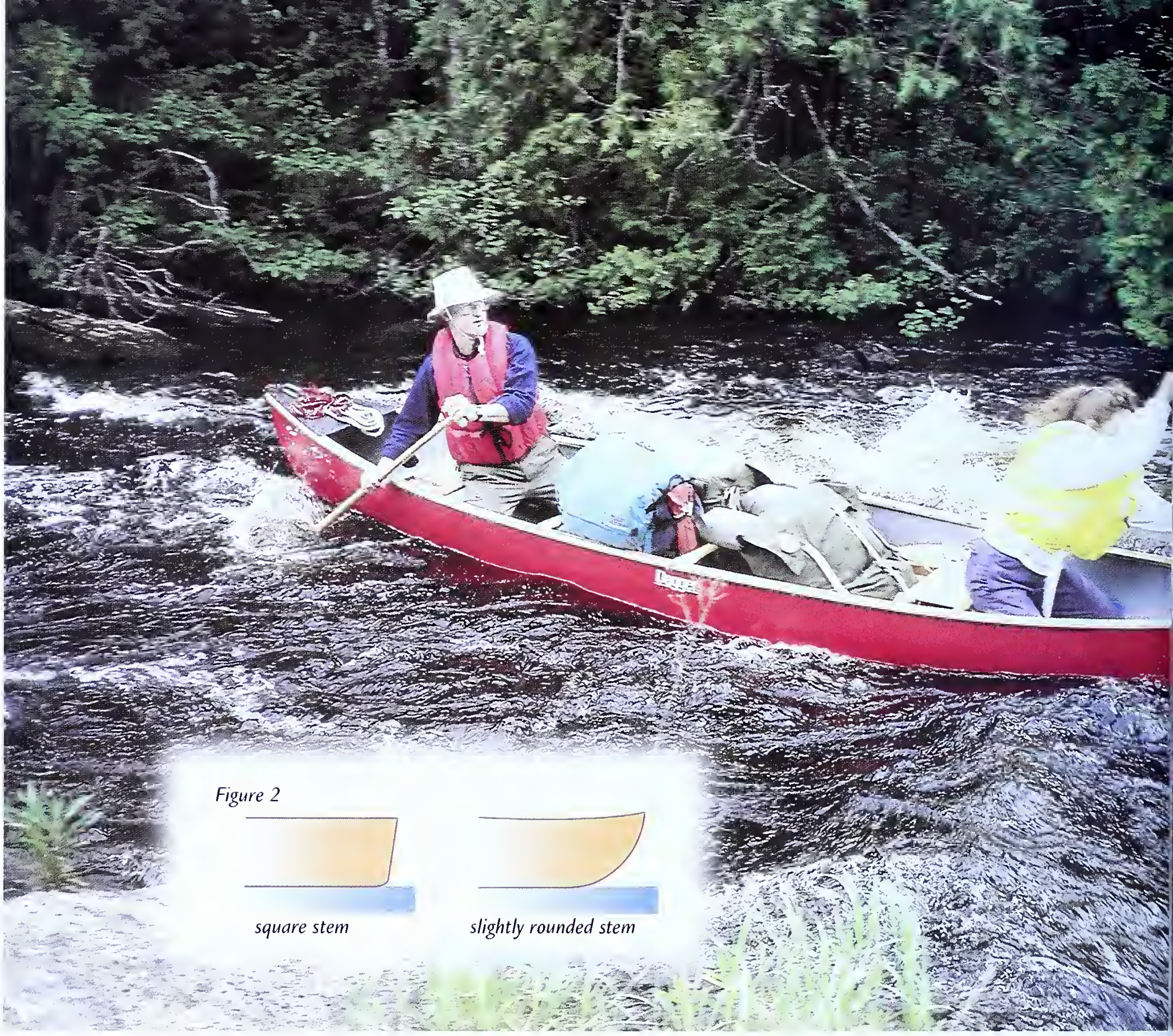


Figure 2

photo-Cliff Jacobson, illustration-Ted Walke

courage upsets. Let's not mince words: External keels are usually the sign of an inferior canoe. Any craft that requires an afterthought tacked on below to make it paddle straight belongs back on the drawing board. Straight tracking is achieved by combining a round or "V" bottom with minimal rocker and narrow, deep-running (square) stems.

The real reason for a keel is to stiffen a flat, floppy bottom. The biggest, flattest canoe bottom can be strengthened considerably by hanging a piece of angle aluminum or a 1x2 along its length. Throw in a bunch of ribs and a vertical strut or three, and the most shapeless hull will become rigid. Indian and fur trade canoes didn't have keels, and neither should yours!

Rule: The lighter the canoe, the better it will dance downriver.

Take two identical canoes—a 70-pound fiberglass and a 55-pound Kevlar—out for a spin. You'll feel the difference immediately. The lighter boat will accelerate faster and turn more easily. It will also ride higher in the water and perhaps run more quietly. If you want to dance down a twisty stream, wear light shoes!

Color may influence the weight of some fiberglass/Kevlar canoes. Royalex and polyethylene canoes all weigh about the same, regardless of color. But variations abound in fiberglass/Kevlar canoes: The weight difference (a pound or two) is caused by the amount of pigment needed to color the gel-coat. Red, blue, green and yellow canoes tend to be heaviest; almond and white are generally the lightest. Canoes with clear (no pigment) gel-coat are the lightest of all.

All fiberglass/Kevlar canoes "scratch white" when they hit rocks. For this reason, I prefer white and almond-colored canoes because they are the lightest of their breed and the scratches don't show through. Note that some of the best lightweight canoes are reinforced with carbon fiber (graphite), which is coal-black and can't be colored. A clear (no-pigment) gel-coat is applied over the carbon fiber to protect it from the elements.

Rule: The shorter and lighter the solo canoe, the better.

Paddling down a snaky stream in a purebred solo canoe is like touring the back roads of America in a vintage roadster. These little canoes encourage smiles.

In the hands of a capable paddler, just about any solo canoe shorter than 15 feet will artfully negotiate a twisting course. Longer solos can be turned smartly if you lay them on their side and use the rocker in the sidewall to make the turn.

Until a few years ago, 13 feet was the norm for snappy whitewater solo boats. Now, nine-foot and 10-foot solo canoes are commonplace. These short, highly rockered play boats really do "pivot on a penny"!

The lighter the solo canoe the faster it will accelerate and turn. A lithe, well-built 13- to 15-foot canoe will weigh about 35 pounds. Except for rock-bashing whitewater, 45 pounds is the absolute limit for a true solo canoe. Ultra-light Kevlar composite canoes are worth the hundreds of extra dollars they cost. Compare a 32-pound Kevlar canoe to an identical 42-pound fiberglass one and you'll see why!

All in all, a good twisty stream canoe is short (15 to 17 feet long), lightweight and moderately rockered. The stems (ends) are well-rounded and there is no keel. The seats are set at a comfortable (safe!) height for kneeling.

Construction materials include aluminum, Royalex, polyethylene, cedar-canvas, wood-strip, fiberglass/Kevlar—take your pick. Except for bad rapids, hull materials don't matter. I've used relatively fragile fiberglass-covered wood-strip canoes on some pretty mean rivers, and they've all come home in one piece.

Beginning canoeists are consumed with the belief that strength is everything! It isn't. Good canoeists are able to avoid most obstacles; they seldom hit rocks at high speeds, head on. Any well-made canoe, even a wooden one, will take this kind of "gentle abuse" in stride.

Please put durability out of mind. Instead, select a well-built lightweight craft that makes you smile when you step aboard.

Test It in the Store

You usually can't take a new canoe out and try it, so here are some tests you can perform in the store:

1. Place the canoe on a level, non-abrasive surface and climb in. Can you kneel beneath each seat? This is important because kneeling welds you to the craft and increases stability. **Exception:** Some fine-lined canoes—which are seldom good twisty stream canoes—are too narrow in the bow for kneeling (you can't spread your knees wide for stability). In these boats, it's better to have a low-mounted seat and to brace your feet solidly against the bow flotation tank. Knees should be spread and braced against the sides of the canoe.

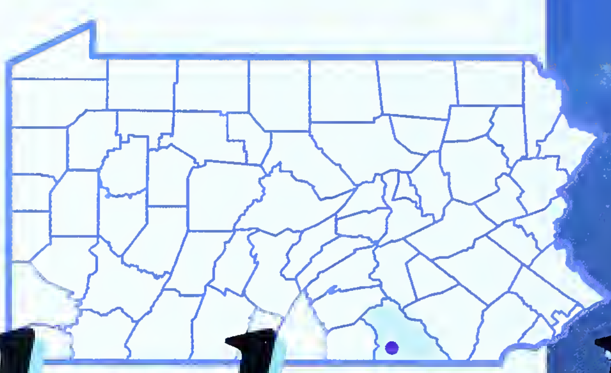
Beginners feel most confident in a "stable" canoe, so manufacturers set their seats close to the floor, which lowers the center of gravity. However, you're in big trouble if you capsize in moving water and your feet become trapped under a low seat. The minimal foot clearance you'll need if you assume the recommended "heels down/ankles flat" kneeling position is 10 inches. "Heels up" paddlers will need 12 inches or more space.

Don't buy any canoe whose seats can't be easily raised!

2. The manufacturer's listed canoe weights are almost always overoptimistic. Take a bathroom scale with you when you go canoe shopping!

3. Measure the rocker: Spin the canoe around on the ground. If it spins easily, it probably has a fair amount of rocker and will turn quickly. You can also look at the hull at ground level to see how much deadrise there is at the ends; or you can measure it precisely. But the spin test will help you estimate maneuverability if you compare several canoe models.–*CJ.*

York County Wonderland



by Mark Demko

Just a few miles north of the Maryland-Pennsylvania border in York County, there's a place where anglers can troll for big, chunky rainbows in the morning and then match wits with colorful streambred browns in the afternoon or evening. The location is Lake Marburg in Codorus State Park, and adjoining Codorus Creek, near Hanover. These waters offer a trout fishing combination unlike any other in the southeastern part of the state.

photo-Richard A. Snyder

Lake Marburg is located about 15 miles southwest of York. It is a popular spot for anglers seeking warmwater species such as walleyes and panfish. But the 1,275-acre lake also harbors a good population of rapidly growing rainbow trout, which cruise the depths of this deep, man-made impoundment.

Because the fish prefer deeper water, the most successful anglers fish the lake with downriggers. One of these anglers is Lance Frace, a Littlestown Area School District teacher.

Even though the average Lake Marburg rainbow runs about 14 to 17 inches, larger trout are not at all uncommon. Frace, trolls the lake using spoons and small crankbaits. He reports that the fish he catches average "about 16 to 17 inches, and it is not uncommon to catch them over 20 inches."

Commission Area 6 Fisheries Manager Mike Kaufmann agrees with this assessment, adding that a few anglers who don't fish with downriggers are also successful in catching nice rainbows. Anglers tell him that they commonly catch fish that are 18 to 23 inches long, and some even do so by just dropping a line to the bottom.

photo-Eric Engbretson

Frace, who honed his downrigging skills years ago while fishing New York's Finger Lakes, reports he catches most of his fish by trolling with spoons just above or in the thermocline, where the baitfish are often suspended. "The thermocline in the lake pretty much stays right around that point of about 30 to 45 feet," he says.

As far as the best time to try for the rainbows, Frace thinks the best fishing takes place in July and August. "The reason for it is because the lake starts to get a little green tint to it because of the algae," he says.

Even though early morning fishing is good, Frace thinks the fishing only gets better once the sun has been up a few hours. "The best time I have found is between 8 o'clock and 11 o'clock in the morning," says Frace.

Evolution of a trout fishery

From the beginning, the whole story surrounding Lake Marburg and Codorus Creek's evolution as coldwater fisheries has been unique. Not only is Marburg one of the few lakes in the state with the potential as a trophy rainbow trout fishery, but thanks to the cold water flowing from the lake, a stretch of Codorus Creek has slowly been transformed from a put-and-take stocked trout stream to a quality wild brown trout fishery.

Until the mid-1960s, the West Branch of Codorus Creek, a warmwater stream, flowed through the rural area near Route 216 in York County. But in late 1966, the P.H. Glatfelter Company dammed the creek to create a water supply for its plant in nearby Spring Grove. Today, resulting Lake Marburg supplies water both to the plant and to the borough of Spring Grove, while serving as a recreational area for boaters and anglers.

Lake Marburg, which reaches depths of over 100 feet near the dam, is a "two-story" lake, supporting both warmwater and coldwater species. The P.H. Glatfelter dam itself is a multi-release dam, which allows the lake's frigid water to flow into Codorus Creek, creating a great wild brown trout fishery for several miles.

Even though the abundance of cold water has sustained both fisheries, the efforts of the Commission gave birth to and nurtured the fisheries. Back in the 1970s, the Commission first started stocking trout fingerlings in Lake Marburg,

Commission biologists electrofish the Selective-Harvest area of Codorus Creek. This special-regulation area covers about two miles.

photo-Richard A. Snyder

and shortly thereafter anglers began catching the fish.

But before the trout program would become successful, it would take some fine-tuning by the Commission. Into the 1980s, the lake was stocked sporadically with fingerlings as they became available, but the trout population seemed to be on the decline. According to Kaufmann, the returns began to diminish and people were not catching the rainbows as they had been. The last fingerling stockings took place from 1989 to 1991, when 40,000 were released annually. Then, in 1993, the Commission conducted a lake fish population survey, which confirmed suspicions that the fish simply weren't there anymore. "In that population survey, we caught only one adult rainbow trout," Kaufmann says.

Even though the Commission knew the lake had "trophy" potential, too many predators were feeding on the tiny trout. "Mainly we figured walleyes were probably the species feeding heavily on the rainbow trout fingerlings we were stocking. So we came up with the idea of stocking adult rainbows in the lake at a very low stocking rate," says Kaufmann.

So since 1995, the Commission has annually released 4,200 rainbows following the trout season opener. The idea behind the low-density adult stockings of 3.4 fish per acre is two-fold. First, adult fish, which are about 10 inches long, are able to elude hungry walleyes better than fingerlings. Second, the low stocking rates on this large lake dissuade many anglers from pursuing the fish immediately on release, which buys the trout some extra growing time.

"These fish are stocked after opening day because our intentions are not to provide an instantaneous fishery, but instead what we call a 'put-grow-and-take' fishery, says Area 6 Fisheries Biologist Dave Miko.

Although the Commission has not conducted a formal survey of its stocking program at Lake Marburg, its findings while conducting fall walleye reproductive success surveys suggest a rapid rainbow trout growth rate in the lake.

"We learned that the 10-inch fish stocked in the spring were reaching 13 1/2 to 15 inches by October, which is tremendous growth," says Kaufmann.

So with reports of anglers already catching fish up to 25 inches long, is the maximum growth length in sight yet? Biologists don't know that answer because there is one big variable that is part of the equation. "It's probably the harvest component of fishing pressure that will limit the size that these fish attain," says Kaufmann.

Barring a major harvest by anglers in the next few years, don't expect the cap to be reached too soon. When asked what anglers can expect in years to come, Kaufmann simply replies, "Bigger fish."

Codorus Creek

Like Marburg's rainbow trout, the wild browns in Codorus Creek are the benefactors of the lake's cold water, which enters the main stem from the remnants of the West Branch below the P.H. Glatfelter dam.

"Codorus' temperatures seldom exceed the high 50s throughout the summer," says Kaufmann. "The low temperatures and the high flows guarantee good survival of trout."

Like Marburg's rainbows, the wild browns took hold in Codorus Creek, thanks to the Commission's initial efforts and continued efforts over the years. According to Kaufmann, there was some wild trout reproduction in the stream as far back as the 1970s. "The wild browns originated as progeny from our adult trout stocking program," he points out.

Even though wild browns were already present decades ago, they were never abundant enough to manage the water as a wild trout fishery. And over the years, the Commission's management philosophy on Codorus changed several times but remained centered around stocked fish. In fact, when excessive angling pressure on what was essentially a put-and-take stream began causing conflicts between landowners and fishermen, things began to change.

In response to the problems, a 3.3-mile stretch of the stream was added to the Delayed-Harvest program in 1987. "We wanted to provide a fishery that would last throughout the summer, that anglers would use, and that would have the least effect on landowners," Kaufmann said. "We thought the Delayed-Harvest program would give that to us in Codorus Creek because the water was so cold, and because landowners were willing to allow it."

According to Kaufmann, the Commission began stocking the Delayed-Harvest area preseason at a rate of about 150 trout per acre, the maximum allowed in the Delayed-Harvest program. The stream was also stocked heavily inseason because it was fished fairly hard, but in 1991 when the Commission went to study the effects of fishing pressure on the stocked trout population, it found anything but an empty stream.

"We had the Delayed-Harvest program in effect for five years. Then, a stream electrofishing survey revealed a high Class B *wild* brown trout population in addition to the stocked brown and rainbow trout," Kaufmann says.

This news prompted the Commission to terminate stocking of the Delayed-Harvest stretch with brown trout, continuing only with rainbow trout until a second evaluation could be done of the wild trout population. Then, in 1993, that survey revealed that the streambred browns had become plentiful enough to be listed as a Class A population, the highest Commission listing for wild trout, so the Commission terminated all stocking in the Delayed-Harvest area and moved to change the special regulations governing the stream to afford additional protection to the wild brown trout.

In 1995, Codorus Creek was included in the initial group of waters placed in the Selective-Harvest program. It was, and is still, the only stream in the program whose wild browns owe their existence to cold water coming from a lake. As for posting, about half of the original Selective-Harvest area has been lost from the program through changes in land use at two properties and anglers walking through a freshly germinating cornfield at the third. About two miles remain open to fishing.

Making a great stream even better

Commission biologists have discovered that the Selective-Harvest area supports as much as 1,391 fish per mile, which is very good, and they have electrofished trout up to 23 inches long. In fact, even the stream section just above the Selective-Harvest area and into the West Branch holds good numbers of streambred browns.

Even though the wild trout are thriving, they have needed a little help along the way. This is because Codorus is a coldwater fishery evolving from a warmwater environment. "If it lacks anything, it lacks forage," explains Kaufmann.

To improve the forage base, especially for trophy trout, the Commission brought in trout "food" from other streams. According to Kaufmann, four years ago the Commission electrofished several Berks County streams with good sculpin populations and the fish were then released into Codorus Creek. Kaufmann says that the sculpins are reproducing, "but they are very slow to expand their range." So the Commission stocked more sculpins and brought in scuds, tiny freshwater shrimp, to improve the forage base.

Codorus' browns have also gotten much help from the local Trout Unlimited chapter, which has created stream deflectors, placed boulders and constructed mud sills in the stream. "We've done work on roughly two miles of the stream," notes George Myers, longtime member and past president of the Codorus Chapter of TU.

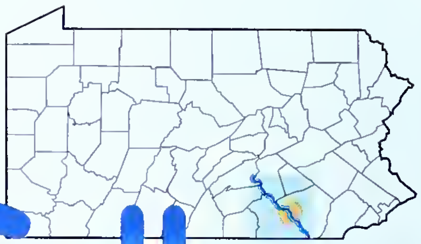
Thanks to the management practices of the Commission and the work of the TU chapter, Codorus is showing signs of becoming an even more diversified wild trout fishery in the years to come. "At a few of the sites where we did bank stabilization work, Commission biologists turned up fingerling rainbows," explains Myers.

Kaufmann remembers that the wild rainbows were quite a discovery to the Commission. "They were surprising to us, first of all, and our initial reaction was that they were either wild rainbow trout or fingerlings coming out of Lake Marburg," says the biologist.

Commission personnel ruled out the latter option because Lake Marburg's fingerlings would have grown much larger by electrofishing survey time than the small rainbows they were turning up. "So they had to have come from reproduction of rainbow trout we had stocked as adults in the Delayed-Harvest area," says Kaufmann.

In a place where a man-made lake is producing trophy rainbows, while the water below its dam harbors wild brown trout, streambred rainbows are simply another fantastic discovery in this angling wonderland.

Shoreline Fishing at Conewago Falls



by Robert H. Miller

The Susquehanna River is well-known for its world-class smallmouth bass fishing. Competent, professional guide services are available to take fishermen down the river in a johnboat or bass boat, but it's not something most people can afford to do every day. Floating the Susquehanna River in your own boat is certainly a satisfying experience, but it's often difficult to find fellow fishermen willing and able to share the expenses. Fortunately, there's a way to avoid these costly complications and enjoy the same level of world-class fishing as the guys with the guides or the boats. The shoreline angler can enjoy phenomenal fishing on the Susquehanna River if he knows where to look.

photo-Robert H. Miller

Conewago Falls is a section of the river that offers "shoreline" fishing unrivaled on any other part of the Susquehanna River. Here, prime fishing is available without endangering life and limb, wading the treacherous bottom, or worrying about broken props or dented hulls. Conewago Falls fishing offers an unusual combination–it's excellent and it's accessible.

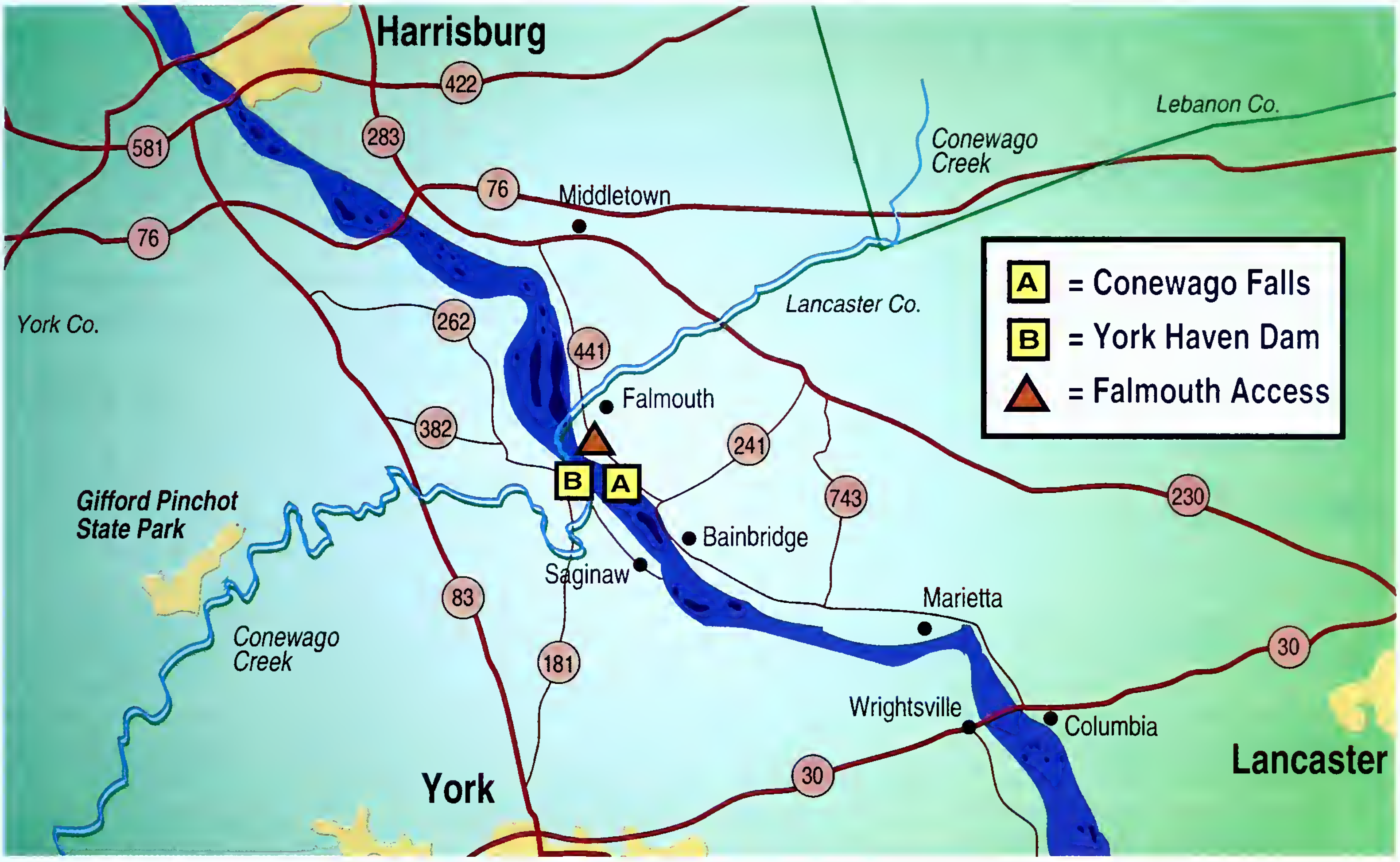
What makes this area unique is the positioning of the York Haven Dam and the slope of the riverbed. Beginning at York Haven Dam, the river begins dropping rapidly on its way to Chesapeake Bay. This exposes thousands of boulders and creates Conewago Falls. Boulders and bedrock ridges stretch intermittently upriver and downriver for a mile and reach from shore to shore. This gives the appearance of an endless river of cooled lava, carved into a thousand sculptures by rushing water. During low water levels, these boulders are so numerous, you can almost walk across the entire half-mile-wide river without getting your feet wet.

The exceptional fishing on this part of the river could be the exclusive domain of guide services or boat owners if it weren't for the efforts of the Fish & Boat Commission. Luckily for the shoreline angler, the Commission maintains several public access points in the area.

Access

George Geisler, Assistant to the Director and formerly Assistant Supervisor for the Southcentral Region, says there are several river access sites to Conewago Falls in both Lancaster and York counties. In Lancaster County, the Fish & Boat Commission maintains a public access site at Falmouth. It's located off PA 441, 12 miles north of U.S. Route 30. This is the most developed access site in the area. It has a large parking lot, a tackle shop, and a walking path that leads you north to the dam. The Commission owns a quarter-mile of shoreline north of the Falmouth Access, but the property south of the access is private and posted, except at the water's edge. One mile north of the Falmouth Access, PA 441 crosses Conewago Creek, at the south entrance to Three Mile Island. There is limited parking here, but it's worth investigating in the spring when the creek mouth attracts gamefish.

On the York County side of the river, PPL Utilities maintains the Conewago Boat Launch in the town of York Haven. This is a primitive launch site without any amenities. North of York Haven on River Road, the York Haven



Dam powerhouse has tailrace access from the cat walk, but be certain to avoid the dam itself. Geisler warns that anyone walking on the dam breast risks arrest.

When to fish

Mike Kaufmann, Area 6 Fisheries Manager for the Pennsylvania Fish & Boat Commission, says fishing is best in the one-mile stretch between the Falmouth Access and York Haven Dam when the river level is just enough to be barely spilling over York Haven Dam, providing the slightest visible current among the rocks. Anglers can calibrate their good fishing experiences with river stage information by calling (888) 881-7555 (National Weather Service at State College, River Forecast Center) to obtain river stage information.

However, too much flow and fishing among the rocks is extremely dangerous. Don't attempt this kind of fishing in these hazardous conditions. Kaufmann also sees improvement in the fishing below the dam immediately following rainfalls after low-water conditions. He says the rain lowers the water temperature, and flow over York Haven Dam and in Conewago Creek draws more and larger gamefish toward the dam from downstream river stretches.

Kaufmann describes this section of river as being in "good shape" and holding a diversity of fish species including smallmouth and largemouth bass, walleyes, stocked tiger and purebred muskellunge, channel catfish, and a variety of panfish. However, angling pressure is intense, resulting in cropping of localized smallmouth bass and walleye populations down to the 15-inch size limit. It is not unusual to hear of an angler catching 50 smallmouths or walleyes in a day, with only one of the fish legal size.

WCO Derek Pritts, whose district is northern Lancaster County, favors the winter and spring fishing when walleyes hug the shoreline to avoid the raging waters of the main channel. "You can catch 'em right from the (Falmouth) boat launch at that time of year," he says.

What to fish

Pritts has some recommendations for bait fishermen. "The most popular bait is minnows, followed by hellgrammites and crayfish," he says. Nighttime fishing is permitted at the public access areas, and this makes them a favorite of channel catfish anglers. When questioned on catfish bait, WCO Pritts laughed and said, "I've seen pretty much everything." What's his advice for spin fishermen? "Try plastic grubs and small, shallow-running crankbaits."

Dress right

"Shoreline" fishing from the boulders can be dangerous if you're not careful. It's important to wear boots with high-traction soles specifically designed for hiking. The rock faces can become dangerously slippery when covered in silt or splashed with water. The best advice is to move slowly and cautiously when you're on the rocks. Always wear a personal flotation device. Hands-free walking is the safest way to negotiate the boulders, so you should carry tackle and gear in a backpack or waist pack. The less gear you carry, the easier it is to land the big one.

Recap of 1999 Pennsylvania Fatal Boating Accidents

by Dan Martin

1. One fatality, Juniata River, Mifflin County, 3/3/99, Wednesday, 1:00 p.m.

A 53-year-old angler lost his life while fishing for walleyes in the river when his 12-foot rowboat apparently capsized. The victim was fishing alone on the swollen river. He was not wearing a PFD at the time of the accident. Hypothermia or sudden immersion into cold water was a major factor in this accident.

2. One fatality, Stoneycreek River, Somerset County, 4/10/99, Saturday, 11:15 a.m.

A 53-year-old paddler lost his life when his 9-foot kayak capsized while paddling in whitewater on the river. He attempted to right the kayak twice before exiting. The victim was in front of the kayak, holding on and facing upstream when he was washed into a log jam (strainer). According to a witness, the victim was caught in the strainer for 30 to 90 seconds before he was washed over the jam. Another witness then saw the victim get caught in a hydraulic for about 30 seconds before being washed downstream. Two other paddlers saw the victim about 10 minutes later. They attempted to rescue him but were unsuccessful. The victim was an average swimmer. He was wearing a PFD at the time of the accident. Hypothermia and sudden immersion into cold water were major factors in this accident.

3. One fatality, Allegheny River, Armstrong County, 4/25/99, Sunday, 10:15 a.m.

A 26-year-old man lost his life when his 12-foot open motorboat apparently swamped and sank. The facts surrounding this incident are vague; the surviving witness is a five-year-old girl. The girl related that the boat began to fill with water and then sank, putting her and her father in the river. PFDs were on board but the victim was not wearing one. Thankfully, his daughter did. Four hours after the accident, the little girl was found on shore by a bicyclist, crying and nearly dry. Rescue companies were called to the scene. Most importantly, no plug was in the boat. Hypothermia and sudden immersion into cold water were probable factors.

4. One fatality, Kinzua Reservoir, Warren County, 5/29/99, Saturday, 6:00 p.m.

A 12-year-old girl lost her life when she fell overboard and was struck by the propeller of a 24-foot open motorboat (pontoon). Three girls were riding on the bow; none was wearing a PFD, though the boat had the required number on board. The operator of the boat was traveling at a high rate of speed, making tight turns when the victim fell off the bow. Alcohol was a major factor.

5. One fatality, Youghiogheny River, Allegheny County, 6/19/99, Saturday, 11:30 p.m.

A 28-year-old man lost his life when he fell overboard from an 18-foot cabin motorboat. The operator of the boat was approaching the dock when the victim fell overboard. Alcohol and controlled substances were major factors in this accident.

6. One fatality, Allegheny River, Armstrong County, 7/2/99, Friday, 6:40 p.m.

An 18-year-old man lost his life when he was struck by a 20-foot cabin motorboat after falling off a tube towed by a 16-foot open motorboat. The operator of the boat that struck the victim was not keeping a proper lookout because he was watching his own skier. Alcohol was a factor in this accident.

7. One fatality, Lake Erie, Erie County, 7/9/99, Friday, 11:00 p.m.

A 49-year-old man lost his life when he fell overboard from a 28-foot auxiliary sailboat during a night race. The victim was standing aft of the mainsail mast and leaning against the mainsail boom when a wind gust hit the mainsail, causing an uncontrolled violent jibe to starboard.

8. One fatality, Lake Marburg, York County, 7/23/99, Friday, 11:30 p.m.

A 29-year-old fisherman lost his life when the 14-foot canoe from which he was fishing capsized. The two fishermen in the canoe were brothers-in-law. The victim was on his knees urinating over the gunwale when the canoe suddenly capsized. Both men surfaced and grabbed a PFD and the still-floating canoe. The victim began to panic and before his friend could stop him he left the canoe and his PFD behind and swam toward shore. Alcohol use was a factor.

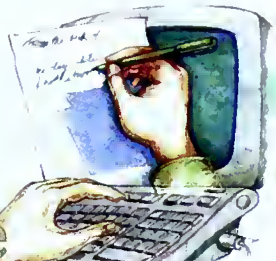
9. One fatality, Delaware River, Philadelphia County, 7/24/99, Saturday, 5:00 p.m.

A 13-year-old boy lost his life when he was struck by the propeller of a 19-foot motorboat. The operator, a 15-year-old boy accompanied by his father, the boat owner, was approaching the dock when he struck the youth swimming in the water. The boy throttled the boat forward and then thrust it into reverse after he thought he saw a swimmer in front of the boat.

10. One fatality, Susquehanna River, Lancaster County, 9/6/99, Monday, 6:00 a.m.

A 26-year-old man lost his life when the 12-foot open motorboat in which he was a passenger swamped and capsized. Three men went hunting on the rain-swollen river. After launching, they realized that the conditions were bad and headed back toward the dock. The boat swamped and capsized. The boat was overloaded, which was a major factor in this accident.

Notes from the Streams



Somerset Co. Sportsmen's League

The Somerset County Sportsmen's League recently made its second $1000 contribution to the Fish & Boat Commission's Co-operative Nursery Grant Program. The group made its contribution at its annual banquet, last October. The League officers presented the check to Commission President Don Anderson. Commissioner Anderson then presented the League with a framed print, "The Waterway Susquehanna". This print and other donated items were raffled that evening for a League fundraiser. A total of $737 was brought in by the raffle. Several clubs purchased and donated Conserve 2000 items for the raffle. Somerset County has eight clubs that sponsor nine nurseries. Somerset County Co-ops rear and release nearly 40,000 trout each year into waters open to public fishing in Somerset County.–*Commissioner Donald K. Anderson.*

Lost-and-found boats

Having served as a waterways conservation officer in a district that borders many miles of the Susquehanna River, I constantly found boats that had escaped their moorings and ended up downstream. Trying to locate the owners was sometimes difficult because in many cases these lost boats contained no identifiable markings. I spent many hours getting these lost boats back to their owners. Most of these hours could have been saved if boat owners would take a few precautions to help us help them.

First, please take the time to moor your boat securely. Second, register your boat. Make sure to include your phone number on the registration application. Also make sure your boat has a legible hull identification number (HIN). If your lost boat is found, by tapping into our secure boat registration computer files, in moments we can track its owner very easily by the boat registration or HIN, especially if you have provided your phone number on your registration.–*George Geisler, Assistant to the Director, Bureau of Law Enforcement.*

Cloe's trout

If the trout at Cloe Dam seem to be getting tougher to catch this year, there might be a good reason. This past ice fishing season, the list of ice fishing gear lost through holes in the ice includes one tip-up, one ice jigging rod and a pair of eyeglasses. Not only will the trout be able to take a better look at your presentation. They will know what to look for.–*WCO Rick Valazak, Jefferson County.*

Not to mention the smell...

While checking fishermen on Laurel Lake one February afternoon, I approached a man who was observed by an undercover deputy catching over the limit of trout during the extend trout season. I observed two trout on the man's stringer, and he became very nervous. Knowing that he had a cooler with more trout, I asked him where his cooler was. He said he did not have a cooler and reached in his pocket and removed two cans of beer and said, "Here, you got me." After explaining that although it was against park regulations to possess an alcoholic beverage in a state park, I was more concerned with where his cooler was. He again replied, "I don't have a cooler."

Deputy Briner then radioed me and informed me that he observed the man put the cooler in the cab of his truck, parked nearby. After getting consent to search the vehicle, the man then admitted that the cooler was behind the seat of his truck. Opening the cooler, I found three more whole trout with the heads and entrails of four other trout. In addition, I discovered a plastic bag containing the heads and entrails of seven additional trout. Because of the strong odor and appearance of these fish parts, it was evident that they had been caught several days before.

The man confessed that he caught four fish the day before and five this day, but the others were caught over a period of several days. I suspected they were all caught in one day but could not prove it. He was subsequently cited for catching two trout over the limit that day and for catching one over the limit the day before. He was also cited by DCNR for possessing alcohol in the park and cited by the Game Commission for failure to report a harvested deer (tags were found in his vehicle). Not only was this individual a terrible liar as he dug himself in further and further with each lie, but he was also a terrible poacher because he brought the evidence of his crime back to the scene...not to mention the smell!–*WCO Craig A. Garman, Cumberland County.*

PA, VA and the ocean

During a steady stream of stocking questions one morning, I received a call from a man who asked me if he needed a license to fish in the ocean. I asked him what ocean he was referring to because Pennsylvania doesn't border an ocean. He said Virginia. I told him he would have to call the state of Virginia to get their regulations. He said he thought Virginia was in Pennsylvania! I checked the clock–it was only 9:30 a.m., so I was left wondering if this guy was serious, kidding me, or if he had more than orange juice that morning.–*Michele L. Klein, Southwest Region Office Secretary.*

Just think of the fun

Recently while preparing to launch the Commission patrol boat on the lake of one of my private communities, I and several deputies heard the following: "The police are here. There goes all the fun for the day, dear. Get the PFDs–we will need them today."

Notes from the Streams

It's a real shame that this boater cannot have fun when a state patrol is on the water. I guess that obeying the rules and regulations that all boaters must obey was the difference. Just think of the fun he and his family would have had if his boat sank and he didn't have any PFDs. What about the fun he would have if he were going the wrong way on the lake a collided with another boat? Just think of the fun he and his family would have with someone floundering in the water who was unable to swim if he violated the slow, no-wake regulation and his wake knocked someone into the water from a dock or another boat.

When the Commission patrols Commonwealth waters, we are not there to stop all fun on the water–just the opposite. With everybody obeying the laws, regulations and rules of the road, and using good common sense, everybody will have fun on the water.–*WCO Gary Slutter, Western Schuylkill/ Northern Berks Counties.*

Dirt and gravel roads and TU

A recently adopted activity known as the Dirt and Gravel Road Program has quietly been implemented in Pennsylvania. Funding is provided to municipalities to address problems associated with runoff and erosion from roads adjacent to streams, causing problems associated with siltation. I'd like to congratulate Trout Unlimited, perhaps the primary initiator of the program. TU's efforts were paramount in its establishment. TU members were then instrumental in making initial surveys to determine which roads needed improvement.

We are in an era in which group involvement has become less "fashionable," especially in sportsmen's clubs very active in a community. Even though this ethic has not vanished completely, it has diminished greatly. An organization that is still going as strong as ever is Trout Unlimited. Its local chapters and members still involve themselves in efforts to improve the sport of angling. There are still many pressures that would serve only to degrade the quality of angling in Pennsylvania were it not for the activities of groups oriented to maintaining water and angling quality. Trout Unlimited is in the forefront of this necessary concept.–*WCO Larry R. Baker (retired), Mifflin/Juniata Counties.*

Witnessing a transformation

Ask dedicated trout anglers and I'm sure they'll agree that a hot, humid, hazy late-August afternoon is not the best time for success in such an endeavor. I was patrolling the Delaware River near the Zane Grey Access, where the Lackawaxen River meets the Delaware. I could hear what sounded like several voices of young boys, perhaps sneaking a quick swim in the area. I reluctantly left the comfort of the air conditioning to take a quick perusal of the area when the four lads, ranging in ages from 9 to 11, came racing from behind the bushes toward me.

"Mister, mister, my friend just caught a big fish!" I gazed in amazement as one of the boys proudly displayed a 17-inch rainbow trout, so fat and healthy that it appeared to have shoulders. "Is this a rainbow?" He asked. "You bet," I said, observing the look of self-satisfaction on the boy's face, "and a dandy at that. What'd you catch him on," I asked, and the boy went into a detailed description of the particular riff, lure and technique that had proved so successful, a treatise worthy of even the most inveterate fly fisherman yet giving due credit to the friend who helped land the prize.

As the boy rambled, I could not keep from looking at his eyes as they madly danced, adding color and texture to the story. My neck tingled with vicarious excitement, as if I had been the one who had grappled the cold, slippery fish, holding it firmly to the shore. I suggested that the boy take his trophy up the street to the tackle shop for a well-deserved photo and the chance to tell his story to the nay-sayers that usually decorate the "liar's bench."

With a smile I returned to the patrol vehicle, thinking that these few minutes had made up for an entire year's aggravation from the less considerate people we sometimes encounter. Suddenly, in a moment of terrible clarity, I was struck by the enormity of what had happened. I had just witnessed an event of cosmic proportion, a rite of passage that few experience. In those few minutes, I watched a boy who fishes turn into a fisherman.–*WCO Leo E. George, Northern Wallenpaupack District.*

Who's next door?

I asked a neighboring officer to serve an arrest warrant for me in Scranton. After knocking on the door with no answer, the WCO decided to call the defendant on the phone. The WCO knocked on the neighbor's door and asked to use the phone. This sweet little old lady was very happy to let the officer use her phone. She was very friendly and conversed with the officer as he dialed the phone number. After the phone rang many times with no answer, she asked who the WCO was calling. The WCO told her the name of the defendant and that he had a warrant for this man's arrest. With that the lady screamed, "Get out of my house–that is my grandson!" The WCO suddenly found himself out on the street. He should have read the note below the phone number that explained who lived next to the defendant.–*WCO Larry L. Bundy Jr., Wyoming/ Eastern Sullivan Counties.*

Cast & Caught

James Nickle Jr., age 11, caught this 3-pound, 8-ounce smallmouth bass last July at Marquette Lake, Lebanon County.

Misha Rugaber, age 7, shows a nice bluegill she caught in northwest Pennsylvania. During her first year of fishing, she caught a 7 ½-pound catfish and a 24-pound carp. Not bad for the first year!

Stanley L. Stein, Ford City, shows his "biggest bass ever"–a 21-inch smallmouth that pounced on a crankbait in Keystone Lake, Armstrong County, last summer.

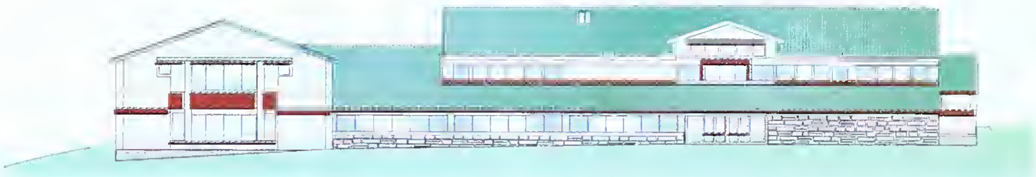
Laura Smyth, 13, Hagerstown, MD, caught this 33-pound striped bass in Raystown Lake last August. The fish was 42 inches long.

Christopher Neskie, age 14, landed this 30-inch, 12-pound carp in the Schuylkill Canal last September.

Jeremy Storm, New Oxford, caught this 7-pound, 24-inch rainbow trout in Middle Creek, Adams County, last May. A fly rod and a commercially scented bait product did the trick.

Gerald Tingley, Conneaut Lake, holds the 10-pound, 27 ½-inch brown trout he caught last November in Trout Run, Erie County. The big trout took a scented artificial bait product. Tingley brought the fish in on six-pound-test line.

Todd Rossman (left), Gibsonia, shows the 21-pound, 14-ounce lake trout he caught last July in Lake Erie. The big fish was 34 ½ inches long and earned Rossman a Senior Angler Award.



New Commission Headquarters

On Friday, June 2, 2000, the Commission will move into its new headquarters building at 1601 Elmerton Avenue, Harrisburg. The new facility will consolidate the Commission's Harrisburg operations. It will house headquarters offices, a warehouse and public meeting rooms.

The move will commence on Friday, June 2, and continue through the weekend. The goal is to conduct business as usual first thing Monday morning, June 5. This date was selected carefully–it closely follows the busy Memorial Day weekend and takes advantage of "Fish-for-Free" Day, on June 3. The effects on customer service should be minimal.

Because the headquarters computer systems will be shut down at the close of business on Thursday, June 1, there will be only a limited capability to conduct business on Friday. Anyone intending to do business with the Commission in person around that time should plan to do so before or after that weekend.

Moving plans depend on the construction schedule, so the moving plans are subject to change.

Fishin' from the Kitchen

Walleye Stir Fry

by Wayne Phillips

Sweet, succulent walleye and crisp vegetables combine to make an excellent flavor combination.

photo-Wayne Phillips

Ingredients for four servings

☐ About 1 to 1 ½ pounds of walleye fillets, cut in strips.
☐ 1 large cooking onion, cut in strips.
☐ 1 yellow or red pepper, cut in strips.
☐ 1 cup mushrooms, halved.
☐ 1 cup snow peas, left whole.
☐ 2 cloves garlic, minced.
☐ 1 Tbsp. fresh ginger, minced, or 1 tsp. powdered ginger.
☐ 2 Tbsp. soya sauce or to taste.
☐ ¼-cup dry-roasted peanuts.
☐ Salt and pepper to taste.
☐ 2 Tbsp. cornstarch to thicken sauce plus ½-cup to coat fish strips.
☐ 1 cup fish or chicken stock, wine or water.
☐ Peanut oil for frying vegetables and fish.

Procedure

Cut the walleyes in strips and lightly coat with corn starch. Season with salt and pepper. Prepare all the vegetables before beginning to cook. Heat 2 Tbsp. peanut oil in a wok. Add the vegetables in this order: Onions, garlic and ginger, peppers, mushrooms and snow peas. Stir the vegetables as they cook. Add soya sauce and your choice of liquid. Season with salt and pepper. Cover the wok and allow to steam until vegetables are done to your preference. Just before serving, add cornstarch/water mixture and stir immediately to prevent lumps from forming. Cook for a minute or two more. While the vegetables are steaming, add ½-cup peanut oil to a saute pan and heat. When oil is hot, fry the walleye strips, taking care not to overcook them. This should take only a couple of minutes.

Serve

Serve stir fry in pasta or large noodle bowls over steamed rice or Chinese bird nest dry noodles. Another option is using Shanghai noodles. Shanghai noodles are chewy fresh noodles available in most Chinese groceries. Top with walleye strips and garnish with peanuts.

Water Safety Festival at Blue Marsh Lake

The Blue Marsh Lake Water Safety Council will hold its annual Water Safety Festival on Sunday, June 11, 2000, from noon to 5 p.m. at the Dry Brooks Day-Use Area by the swimming beach. The festival's purpose is to promote safety around water for people who participate in swimming, boating, fishing and other water-related activities. The day's events include demonstrations on proper personal watercraft operation, canoe and kayak safety, adapting boating equipment for persons with disabilities, and search and rescue demonstrations by federal, state and local rescue and safety organizations. In addition, the public will have the chance to win prizes, enter into a casting contest and see the Life Lion helicopter, Reading Fire Department's LARK amphibious vehicle, and displays of the latest in boats and personal watercraft. The Blue Marsh Lake staff will also offer tours of the dam's control tower. For more information, contact the Blue Marsh Lake project office at 610-376-6337.

Correction

In the "Notes from the Streams" item "Tea Creek," in the September/October 1999 issue, we reported that the Commission conducted electrofishing capture and reintroduction of brown trout. Following the August 5, 1997, pollution incident that resulted in a fish kill on Tea Creek, the Fisheries Management Division did not conduct any electrofishing capture and transfer operation to repopulate the wild brown trout fishery in Tea Creek. Instead, Fisheries Management Division personnel examined the stream during the 1998 field season with the thought that the brown trout remaining in the stream would repopulate Tea Creek.

An examination of the stream was conducted on August 19, 1998. The results of this inventory showed that Tea Creek is well on its way to recovery without the need for any transfer operation.

The mission of the Pennsylvania Fish & Boat Commission is to provide fishing and boating opportunities through the protection and management of aquatic resources.

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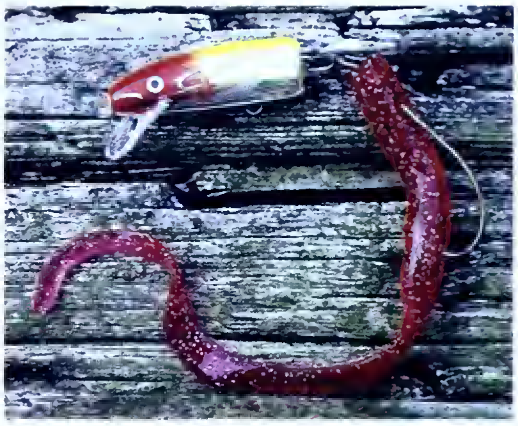
Angler's Notebook *by Jon Farley*



Fishermen are frequently forced to choose between a hard-bodied plug or a rubber worm when going after bass, but indecisive anglers can take advantage of both types at the same time. Remove the treble hooks from a jointed crankbait and separate the two halves. Next, attach a large worm hook to the rear of the front half using a small split ring. Finally, attach a rubber worm to the hook to make a plug/worm combination.

Though spinning reels are very popular among anglers, their open-faced design can make line management difficult. New or very stiff monofilament tends to come off the spool too easily. Old line often coils and doesn't flow off the spool easily enough. Soaking the spool in warm water for a few minutes solves both of these problems.

Fly fishing has a reputation for being very hard to learn. Here's one trick to help newcomers have more success with subsurface flies. Tip a big, colorful wet fly with a small chunk of nightcrawler and fish the combination through likely holding water on your favorite trout stream. This can help you learn the subtleties of detecting strikes and put a few more hookups "under your belt" before progressing to more advanced techniques.

A variety of rubber bands stored in a tackle box or fishing vest can come in handy on the water. They can be used to hold together broken-down rods, to keep line from coming off a reel, and to hold up socks inside waders. Small ones can even be used to attach live bait to hooks.

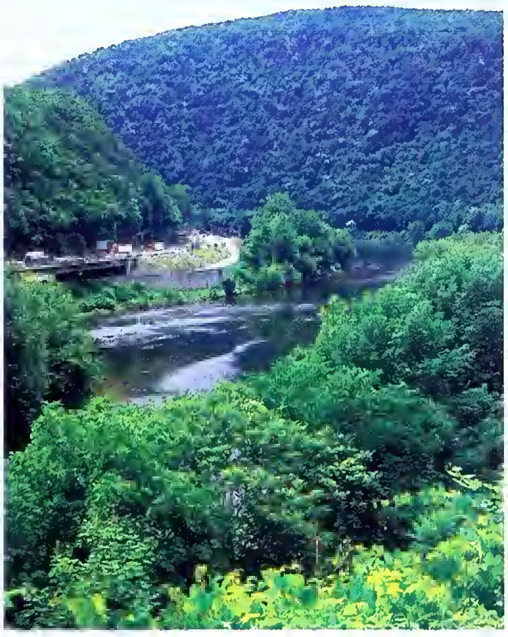
Areas on streams below low overhanging tree branches often attract many trout. Unfortunately, casting into these places is usually impossible. One way to get around this is to put your lure on a large leaf and place it in the water upstream from the obstruction. Open the bale on your reel and let the leaf float toward the branches. When it reaches the cover, gently pull the lure off the leaf to put it right in front of those shelter-seeking trout.

photo-Art Michaels

Photo Contest Tips

by Art Michaels

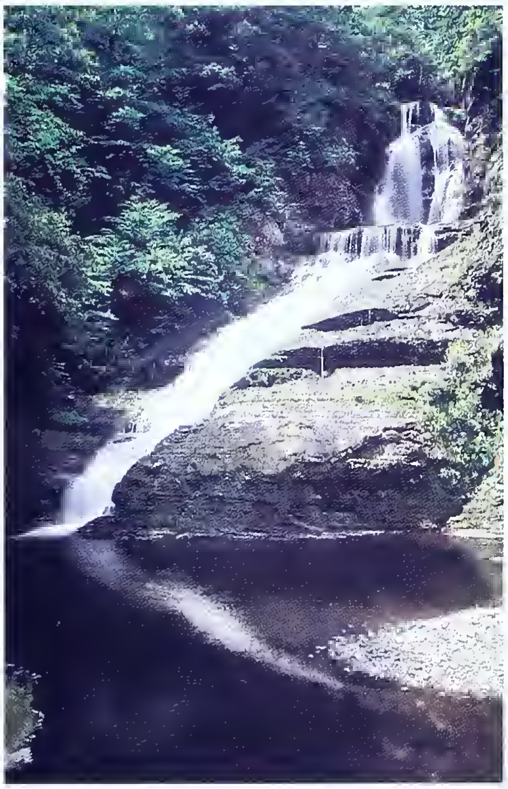
Be sure to check out the details of the Commission's Photography Contest on page 63! Use these ideas to take some great fishing, boating and waterway photos this season! For more ideas, see the photo tips in the last issue, too. ***Check out upcoming issues for more photo tips!***



WATERWAY SCENICS. Good scenics have a foreground, a middleground and a background. Put people in your pictures, or objects that let a viewer immediately see the scene's size and distance relationships (vehicles on the highway in this picture). **Exposure:** Fuji Velvia, about 1/30-second at f/5.6.

FAST ACTION. Use faster-speed film (ISO 100, 200 or 400), and shoot at faster shutter speeds. With ISO 100 speed film, for example, you can "freeze" the action of boats, water skiers, personal watercraft and water spray droplets at a shutter speed of about 1/500-second or faster. With ISO 100 speed film and full sun frontlighting the subject, start with an exposure of 1/500-second at f/8. **Exposure:** Fuji Provia 100, about 1/500-second at f/8.

SLOW ACTION. Photographing flowing water at slow shutter speeds can give the water a silky look. For taking this kind of picture, you need a sturdy tripod and a camera on which you can adjust the shutter speed. Use shutter speeds of about 1/8-second to about one second. Try films with speeds like 64, 50 and 25. **Exposure:** Fuji Velvia, about 1/4-second at f/16 with a .6 (2-stop) neutral density filter.



NIGHTTIME SHOT. Consider capturing a fully moonlit scene, or city lights reflecting in water. Your camera must be able to expose the film at least for a few seconds. You need to place the camera on a tripod to keep the image sharp. To capture city lights and their waterway reflection, with ISO 100-speed film try f/5.6 at 6 seconds as a starting point. Try almost dark and fully dark shots for different effects. **Exposure:** Fuji Provia 100, about 40 seconds at f/11.

BACKLIT SUBJECT. Backlighting means that sunlight comes from behind the subject. Backlighting can produce pleasing lighting effects. As a starting point for correct exposure of a close backlit subject, set your camera's shutter speed and aperture for a "normal" sunlit exposure and then open the aperture two f/stops. **Exposure:** Fuji Provia 100, about 1/125-second at f/8.

photo-Ted Walke

Year 2000 PFBC Photography Contest

PICTURE THIS! **Your photograph in *Pennsylvania Angler & Boater* Magazine, in Commission publications, on the Commission's web site, and on Commission exhibits!**

The Year 2000 Pennsylvania Fish & Boat Commission Photography Contest is intended to foster a greater appreciation for Pennsylvania's fishing and boating, and aquatic resources.

Contest winners will be determined by a panel of judges chosen by the PA Fish & Boat Commission. Photographs will be rated on qualities including composition, originality, visual appeal and adherence to contest rules. First-, second- and third-place winners, and honorable mention winners, may be selected in each category.

Contest winners and honorable mention winners will receive a certificate. Winners will also receive a large-size (6-inch diameter) 10th Anniversary Trout Stamp patch. Honorable Mention winners will receive a year 2000 Trout Stamp patch. Winning entries and honorable mentions may appear in a contest feature article in a future issue of *Pennsylvania Angler & Boater*. All entries may also be used elsewhere in the magazine, on the magazine's cover, in Commission publications, on the Commission's web site, and in Commission exhibits.

The contest will run from January 1, 2000, through December 1, 2000. Winners are scheduled to be announced during an awards presentation at the January 2001 Commission meeting.

Rules

- The contest is open to amateur photographers (anyone who makes less than half one's annual income from taking and/or selling photographs).
- Entries must be original works taken in Pennsylvania, and they must have been taken by the person entering the contest.
- Entries must also show adherence to Pennsylvania fishing and boating laws and regulations.
- In photographs all boaters, and anglers in boats, must be wearing properly fitted, buttoned and zipped life jackets.
- Entrants may submit only mounted 35mm color slides, color prints in sizes 3 $^{1}/_{2}$"x5", 4"x6", 5"x7", or 8"x10", or unmounted medium-format and large-format transparencies.
- All submissions must be in color–no black-and-white photos.
- All submissions must be original–no duplicate slides or electronic submissions.
- No mounted, over-matted, framed or glassed prints will be accepted.
- Retouched or electronically manipulated entries are not allowed.
- Please do not send negatives.
- Each photo must include the entrant's name, address, phone number, location of the photograph, and category, in addition to a fully completed official entry form on this page for each category entered.
- Participants are limited to a total of two entries per category. Multiple submissions are allowed, as long as entrants submit no more than two items per category.
- The Pennsylvania Fish & Boat Commission shall have the right to use all submissions for publishing, illustration, World Wide Web display, advertising, trade, exhibitry and promotion, or any other use in any medium for any purpose without compensation.

Entrants who want their materials returned must include a self-addressed, stamped envelope with the right amount of postage and appropriate packaging to safeguard materials. Submissions that do not include return envelopes and postage will not be returned.

Photo Contest Entry Form

www.fish.state.pa.us

Complete this form with each entry and mail to: PFBC Photo Contest, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000. The deadline for the Commission's receiving entries is December 1, 2000.

Entrant's Name: ______________________________

Address: ______________________________

City: ________________ State: ________ Zip: ________

Phone: ______________________________

E-mail (if available): ______________________________

Date: ______________________________

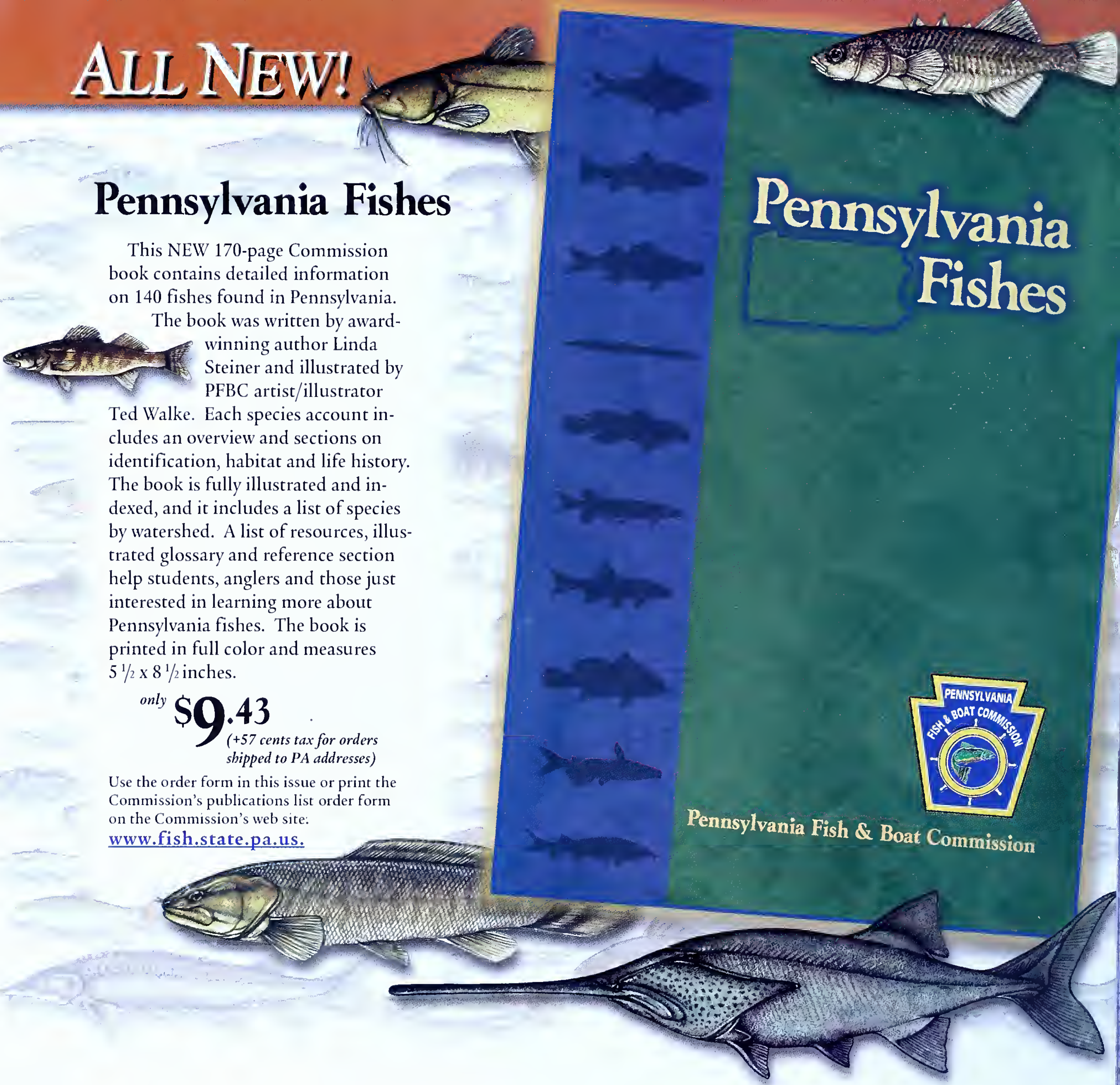
Signature: ______________________________

Categories

☐ 1. Seasonal Fishing and/or Boating
☐ 2. Family Fishing and/or Boating
☐ 3. Reptiles and Amphibians (Animal closeups, or photos with the animals as the primary subject)
☐ 4. Invertebrates (worms, aquatic insects, crustaceans, mussels)
☐ 5. Fishing & Boating Resources (primarily waterway scenic emphasis)

Office use only - Leave blank
Category:Entry #:

This form may be photocopied.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This NEW 170-page Commission book contains detailed information on 140 fishes found in Pennsylvania. The book was written by award-winning author Linda Steiner and illustrated by PFBC artist/illustrator Ted Walke. Each species account includes an overview and sections on identification, habitat and life history. The book is fully illustrated and indexed, and it includes a list of species by watershed. A list of resources, illustrated glossary and reference section help students, anglers and those just interested in learning more about Pennsylvania fishes. The book is printed in full color and measures 5 1/2 x 8 1/2 inches.

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Pennsylvania ANGLER & BOATER

PENNSYLVANIA FISH & BOAT COMMISSION

July/August 2000 $3.00

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The Keystone State's Official Fishing and Boating Magazine

PROTECT • CONSERVE • ENHANCE

Moving Ahead

Two milestones occurred during the first week of June 2000. On June 1, the York Haven Power Company, a GPU company, hosted the dedication of the new serpentine vertical-slot fish ladder at York Haven Dam, and on June 2, the Fish & Boat Commission moved to its new headquarters at 1601 Elmerton Avenue, Harrisburg.

The dedication of the fish ladder at York Haven Dam means that all four hydroelectric dams on the lower Susquehanna River now have fully functional fish passage facilities. The utilities that operate these dams have expended about $70 million in a joint venture to provide fish passage through Conowingo Dam, Holtwood Dam, Safe Harbor Dam and, now, York Haven Dam. The Fish & Boat Commission applauds these public-spirited utilities, which joined the resource agencies in a partnership to restore historic migratory fish runs to the Susquehanna.

I believe all Pennsylvania anglers and boaters should take pride in what has been accomplished so far in restoring American shad to the Susquehanna River Basin. The runs of American shad in the Susquehanna River this spring have broken all records. More than 160,000 American shad have passed Conowingo Dam and more than 3,000 have used the new fish ladder at York Haven.

Efforts to restore migratory fish runs to the Susquehanna River Basin have spanned more than a century. In 1866, the Fish Commission was established as a state agency to address diminishing fish populations on the Commonwealth's waters and restore migratory fish runs on Pennsylvania's rivers and streams. From the research of the 1950s to the historic agreements between resource agencies and the utilities in the 1980s and 1990s, the staff of the Fish & Boat Commission have forged a successful partnership with other agencies, the utilities and Pennsylvania sportsmen. I'm proud of the dedicated service of so many individuals who have devoted countless hours to this effort.

The extraordinary leadership of one of my predecessors, Ralph W. Abele, was a key to the success of the shad restoration efforts. As executive director of the Fish Commission in the 1970s and 1980s, Ralph developed the "Resource First" philosophy that guides us today. He established the VanDyke Shad Rearing Station, and he led efforts to have conditions inserted in the operating licenses for the hydroelectric dams to require installation of functional fish passage facilities. Ralph's predecessor as the Commission's executive director, Robert Bielo, continued a vital leadership role in migratory fish restoration as executive director of the Susquehanna River Basin Commission. Richard St. Pierre of the U.S. Fish and Wildlife Service coordinated the efforts of the agencies and the utilities through the Susquehanna Anadromous Fish Restoration Committee, and he was the key player in seeing these projects through from concept to completion.

At the ceremonies dedicating the York Haven fish ladder, John Oliver, Secretary of the Department of Conservation and Natural Resources, once again demonstrated our Commonwealth's strong interagency partnership to restore migratory fish runs all the way from the Chesapeake Bay to Binghamton, New York. Secretary Oliver announced that the inflatable dam at Shikellamy State Park, near Sunbury, will be operated in a way that maximizes upstream passage of American shad in the future. This means that the bags that are inflated to form the dam may have to remain down later in the season, and Secretary Oliver pledged DCNR's support of this effort. The Fish & Boat Commission applauds Secretary Oliver's statement and we will work with him on a permanent solution to fish passage at the inflatable dam.

As American shad move up the Susquehanna River in record numbers in spring 2000, the Fish & Boat Commission is moving ahead in another way to better serve our customers, the anglers and boaters of Pennsylvania. On June 2, our Harrisburg offices moved from our rented quarters on Walnut Street to our new office building at 1601 Elmerton Avenue. For more than 134 years, the Commission's Harrisburg offices have been housed in borrowed or rented quarters. Now we have a home that Pennsylvania anglers and boaters can call their own.

The new headquarters project took many years of hard work and dedicated efforts. The new headquarters is a tribute to the foresight of our commissioners. They realized that our agency's ability to serve Pennsylvania anglers and boaters in a new century would be enhanced by a functional office and warehouse building with adequate meeting space. The members of the General Assembly, who twice voted to approve this new building, and the administration of Governor Tom Ridge, who gave us the go-ahead to make this project a reality, also deserve great appreciation.

Our new headquarters is a direct result of the hard work of a great many Fish & Boat Commission employees over many months and even years. During the move, staff devoted countless hours of their personal time to ensuring a smooth transition.

Our new headquarters represents an affirmation of the importance of fishing and boating programs. It is a visible statement of the Commonwealth's faith in the future of our efforts to provide fishing and boating opportunities through the protection and management of aquatic resources. On July 22, 2000, the Commission will host an open house at our new headquarters. We will cut the ribbon and dedicate our new facility to the future of Pennsylvania's precious aquatic resources. We're moving ahead.

Peter A. Colangelo
Executive Director
Pennsylvania Fish & Boat Commission

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Ralph W. Abele Conservation Heritage Award

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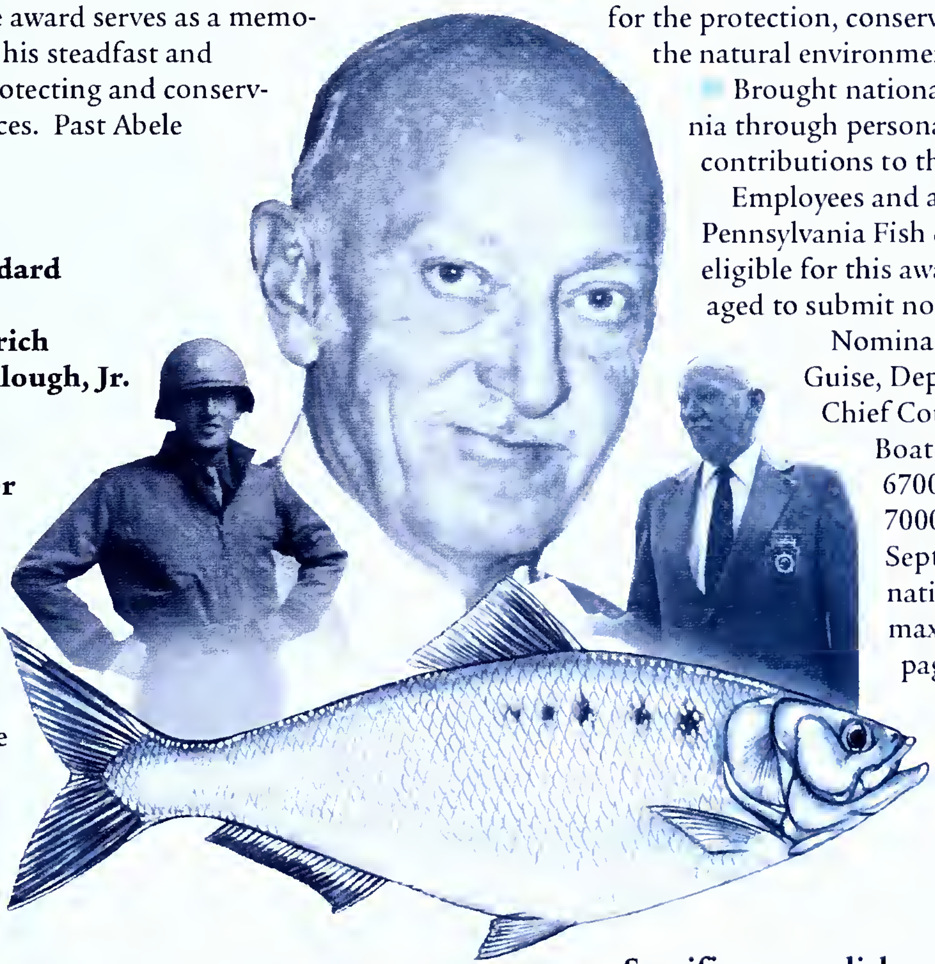
The Pennsylvania Fish & Boat Commission is seeking nominations for the 2000 Ralph W. Abele Conservation Heritage Award. The deadline for nominations is September 15, 2000. The award will be presented at an appropriate ceremony in the fall of 2000.

The Ralph W. Abele Conservation Heritage Award is the highest recognition the Pennsylvania Fish & Boat Commission can confer on persons who distinguish themselves in the cause of conservation. The Commission established the Abele Award to recognize citizens of Pennsylvania who have made outstanding contributions to the protection, conservation and enhancement of the Commonwealth's aquatic resources. The award serves as a memorial to Ralph Abele for his steadfast and courageous work in protecting and conserving our natural resources. Past Abele Award winners were:

- **Ken Sink**
- **Dr. Maurice Goddard**
- **Lenny Green**
- **Dr. William Kodrich**
- **Robert W. McCullough, Jr.**
- **Peter Duncan**
- **James L. Myers**
- **Larry J. Schweiger**



The Abele Award is presented to a Pennsylvanian who has dedicated his or her time and energy to the conservation of the state's natural resources, specifically the aquatic resources, through one or more of the following accomplishments:

- Personally invested heavily in the long-term education of Pennsylvania's youth on conservation issues vital to an improved aquatic environment.
- Put at risk his or her person or livelihood to undertake public activities and positions on behalf of improving and protecting the aquatic resources of Pennsylvania.
- Led a regional or statewide environmental effort that has been recognized for its duration and success in protecting and enhancing the aquatic resources of Pennsylvania.
- Played a leading role in reclaiming and enhancing a major significant natural water resource in the Commonwealth.
- Led an effort to pass major environmental legislation for the protection, conservation and enhancement of the natural environment of Pennsylvania.
- Brought national recognition to Pennsylvania through personal activities, actions and contributions to the aquatic resources.

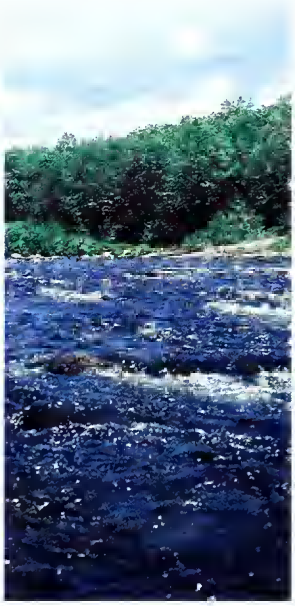
Employees and active Commissioners of the Pennsylvania Fish & Boat Commission are not eligible for this award, but they are encouraged to submit nominations.

Nominations may be sent to Dennis Guise, Deputy Executive Director/Chief Counsel, Pennsylvania Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000 by no later than September 15, 2000. The nominations should describe, in a maximum of three typewritten pages, the following:

- **Biographical information.**
- **How the nominee meets the categories for recognition.**
- **Specific accomplishments of the nominee.**
- **Past recognitions of the nominee.**
- **Affiliations of the nominee.**
- **Additional information to warrant award of this honor.**

Casting Around

To fish or boat, we must first get to the water. I had my favorite local spots where I launched my boat. I also had permission to enter private property to fish several favorite secluded trout streams. That's what "access" means, of course, but it's something I took for granted for a long time. I didn't know the many ingredients that go in to creating and maintaining "access." I also had no idea how complicated access concerns could be for resource users and landowners. Are you like me?



In this issue beginning on page 18, regular contributor Linda Steiner spells out what's happening in an important court case concerning an angler's right to fish the Lehigh River. The implications of this case affect anglers, boaters and landowners.

On page 46, Aquatic Resources Program Specialist Heidi Milbrand explores the topic of recreational access from a more global and regional perspective in this issue's Conserve 2000 article.

Another view of access appears in this issue's water trail article, "Allegheny River Wilderness Islands Water Trail," by Janeal Hedman. The Wilderness Islands Water Trail is a 106-mile Allegheny River stretch of which nearly 87 miles are designated as part of the National Wild & Scenic River System.

Access, and everything it entails, is important because it not only lets us get to good fishing and boating spots so that we can enjoy and appreciate our resources. Ultimately, access lets us practice stewardship, and that means protecting, managing and enhancing our resources.

While you're enjoying Pennsylvania's water resources this summer, remember to bring your camera. Check out the Commission's photo contest details and entry form on page 63, and the photography tips on page 62. We're eager to feature your work in these pages, so fill in the form and send in an entry!–*Art Michaels, Editor.*

with soy-based inks

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July/August 2000 Volume 69/Number 4

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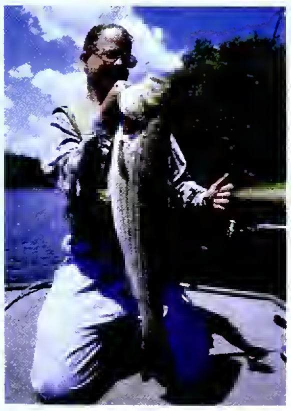
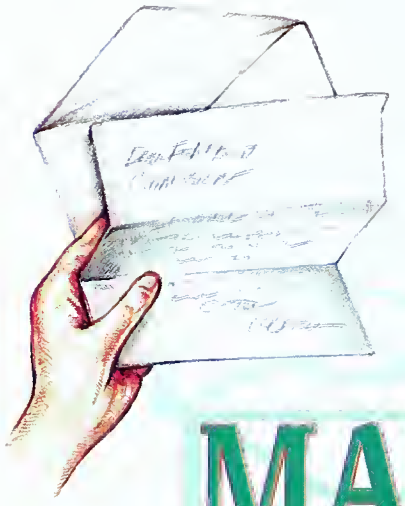


About the cover

This issue's front-cover striped bass photograph was taken by Vic Attardo. The fish was caught in the Philadelphia portion of the Delaware River.



MAIL

Photo contest concern

I was wondering why you are claiming so much right to the photos submitted to the contest. I don't have a problem with them being published in the *Angler*, but when you are not paying anything for their use past the publishing in the *Angler*, I don't feel you have any more right to use them. I would like to submit some photos but can not agree with the carte blanche use without my consent or at least knowing that I will get the recognition that I was the photographer who took them. I am not a professional by any means and only really care about the credit in case I do have an opportunity to sell some photos at a later date. Please answer this so I know whether or not to submit any photos.–*Bob Johnson, via email.*

"So much right" could mean different things to different people. We're not requiring entrants to grant all rights, nor do we limit entrants' concurrent uses of submitted photographs. We do not exclude multiple submissions, either. We'd like to keep our options open to use photos in a variety of ways that would benefit the Commission and the contest entrants. To the best of my knowledge, we've never before run a photography contest. Even if we'd been conducting contests annually, we still have no idea what kinds of pictures we might receive. Editorially, photographs sometimes drive the usage and the written words that might accompany the pictures, and we want to remain open to this possibility.

We didn't say it in the rules or entry form, but professional ethics and courtesy on our part mean we'd credit photographers in all uses where possible and practical.

Our contest is modeled after those in other state conservation agencies. One state that conducts a similar annual contest receives several hundred entries each year. I believe this opportunity could greatly benefit readers in our enhanced ability to inform and educate in a variety of Commission media.–*Ed.*

Green line

In the March/April 2000 issue, contributor Vic Attardo ("Small Crankbaits for Trout") mentions using green co-polymer monofilament line. If trout can see at night, they certainly are in an infrared spectrum, so any non-organic line, camo or shaded, would glow like a camouflaged tank in Vietnam under infrared film. My theory of organic material is debatable, but I view any camo or shaded line as something catching fishermen and not fish. My tackle box is full of these items.–*Wayne Lavis, Bloomsburg, PA.*

In many instances, trout use their vision to find food. An example of this is when they rise to take mayflies on the surface of a stream during a hatch. Trout also have a well-developed lateral line system. This is the line that you will notice about midway down the side of the fish, extending from the operculum (gill cover) to the tail. It almost resembles a seam along the side of the trout. The lateral line is used as a sensory organ to zero in on movements and vibration. This aids the fish in locating food during periods of low light or at night. Trout do have a different range of vision than humans, simply because of the difference in the position of their eyes. For example, the location of our eyes allows us to see things in front of us to a peripheral point. Trout have a better range of vision along their sides, but unless they move their head, they have a blind spot in front. I have never seen any reference in the literature that indicates that trout have infrared vision. Their success in feeding during the night can be attributed to their ability to sense prey through the use of their lateral line.

Concerning the use of different line types, some anglers swear by clear monofilament and others like camouflaged tints. Currently, there are fly lines in almost every color of the rainbow, and all seem to appeal to one angler or the other. You could probably ask 10 anglers their opinions on the best line to use and get seven or eight different opinions. My advice, then, is to use whatever type of line suits your needs and works the best for you.–*R. Thomas Greene, Coldwater Unit Leader.*

Where to get lures

In Vic Attardo's article "Small Crankbaits for Trout" in the March/April 2000 issue, you published a photograph on page 9 that showed a selection of lures. Who makes these lures and where can I get them?–*Robert Johnson, via email.*

You can find these kinds of lures in mail-order and on-line catalogs. Rebel Lures (Pradco), Mann's Bait Company, Worden's Lures (Helin Flatfish), Silver Buddy and Rapala are just a few of the companies that make these lures. Generally speaking, try lures of $^{1}/_{8}$-ounce or $^{1}/_{16}$-ounce with hooks in size 10 or smaller.–*Ed.*

Sinnemahoning Creek

I would like to express my comments about some fine bass fishing I had late last summer into fall. It was almost in my backyard and I didn't exactly know it. Sinnemahoning Creek from Keating to Sinnemahoning was for years acid-stained red. But over the last few years it started getting a dark, blacklike appearance. I kept saying to friends that the creek looks good enough to hold some fish. I stopped at a huge pool below Montour Run. There were big boulders at the head of the pool. The water was low, but there was plenty in the big holes and pools yet. I saw about 50 huge carp in the upper, deeper water, so I went to the lower shallower part, and got my binoculars out. I saw bass, rock bass, minnows and a pickerel swimming up and down the creek. There were two huge bass going downstream. On another trip, I saw a huge carp in the shallows, foraging in the gravel, making little clouds of mud. I couldn't believe my eyes when I saw two smallmouth bass right alongside the carp, all three heads together. They seemed to be eating what the carp would dig out of the stones. The bass were about 15 to 16 inches long.

I decided that it was time to try fishing. So one evening around one hour before dark, I went to the creek to try my luck with plugs. I'm a night fisherman for bass. I caught some beautiful, nice-size bass plus losing a lot of them. So I had a couple of months of good fishing in my backyard.

I've been around Shintown all my life and finally saw a stream get good fish life back in its waters. I'm 65 years old and I had some of the finest bass fishing of my life on the Sinnemahoning in just a couple of months last summer. There are fish from the River at Keating to the mouth of the First Fork and beyond. Some sections have aquatic vegetation. While fishing at dusk and after dark, there are big bullfrogs sounding off, plus fly hatches, beaver and hundreds of crayfish. Some of the pools are huge, even in low water. A small boat or canoe would be useful because the pools are too wide for casting from shore to shore. Some roadside streambank sections are loaded with poison ivy, but the fish are back.

The Sinnemahoning has been there all my life, but I just found out how good it is to fish right at home, nine to 10 miles away.–*Bob Kepler, Renovo.*

Your letter is one of several comments we have received over the past few years regarding improving water quality and fish life in Sinnemahoning Creek, Cameron County, particularly the reach from where the First Fork enters downstream to the mouth at Keating.

Even though the stream still remains degraded by acid mine drainage, water quality appears to have improved enough to sustain aquatic life. One possible explanation for improvement in water quality is reclamation work that has been done upstream, mainly in the Bennet Branch in conjunction with the Bennet Branch Watershed Association. Additional reclamation work has been planned for Dents Run this year, which is a tributary to Bennet Branch and, eventually, the mainstem of the Sinnemahoning.

Another reason some of the acid mine drainage has decreased is actual remining of the old mined areas in the watershed. Different mining techniques used now, the addition of alkaline materials to old mined areas, and reclamation associated with the new mines have all resulted in a decrease in acid mine drainage. Lastly, the acid load of some of the drainages has naturally declined over time.

The First Fork and Driftwood branches of the Sinnemahoning both harbor excellent smallmouth bass populations. It makes sense that the mainstem would also eventually have great smallmouth fishing once water quality improved, especially with the great habitat you described. As soon as time permits, we plan to make an official survey of the Sinnemahoning to look at water chemistry and fish.

Inch by inch, year by year, some of our waters degraded by acid mine drainage are slowly improving. There is still a long way to go until these waters would compare to unaffected streams and rivers, but what little improvement there we see is encouraging.

We hope the good fishing continues and water quality continues to improve, not only for you but for all of us who have driven by miles and miles of red-stained water with horror, and then absolute sorrow for what we have done to the beautiful creation handed us and wondered–what if?–*David Paul Kristine, Fisheries Technician, Fisheries Management Area 3.*

Shad fishing

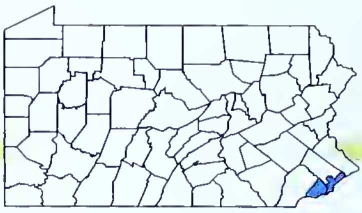
I caught American shad in the Delaware River last May for the first time. What a magnificent fish! Can these fish be found elsewhere in Pennsylvania?–*J. Smith, Harrisburg.*

In Pennsylvania, on the Delaware River the daily limit for American shad is six with no minimum size limit. On the Lehigh River, the daily limit is one shad with no minimum size limit. On these waterways the season is open year-round.

Shad can also be found in the Susquehanna River and its tributaries, but currently the season on the Susquehanna and tributaries is closed.

That may change in the future. Shad anglers may want to read *Migratory Fish Restoration and Passage on the Susquehanna River*. This 20-page, full-color publication was originally printed in 1996. The expanded, updated and revised publication covers the legacy and history of American shad in the Susquehanna, the history of restoration efforts, the current restoration approach, descriptions of six migratory fishes, reopening Susquehanna River tributaries and dam removal, the Susquehanna's influence on Chesapeake Bay, and individual action to aid restoration efforts. The publication was a cooperative venture among federal, regional and state agencies, and other groups. Single copies are available for free. Send requests to: Publications Section, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000.–*Ed.*

Fishing in Philadelphia



by Vic Attardo

Even though the southeast corner of the state is crowded, there are surprising numbers of really good fishing holes in the area. The scenery may not be as uplifting as the backcountry, but it can be pretty exciting catching largemouth bass on the Delaware River with giant cargo ships plowing past you, or wading famous Valley Creek for wild trout in the shadow of George Washington's greatest test.

photo-Vic Attardo

The underlying story of Philadelphia-area fishing is improved water quality. Thanks to the Clean Streams Law, the region's waters are good enough to support quality sport fishing. The most noticeable improvement has been on the two rivers, the Schuylkill and Delaware. In the last 15 to 20 years, shad, striped bass and largemouth bass have made a tremendous comeback in their respective habitats.

You can expect to find good numbers of respectable-size fish around Philadelphia. The shad are unequaled in quality, with fish regularly caught between four and six pounds in the tidal Schuylkill River. In the Philadelphia area the run begins around April 1 and ends in late May. Stripers go anywhere from 12-inch yearlings to 30- and 35-pound monsters, with some stripers even bigger. Largemouth bass in the Delaware are commonly about two pounds, but you can catch bass up to four and five pounds and a few larger.

Smallmouth bass are a really interesting story. Even though the average Schuylkill River bass is only 11 or 12 inches, bass size has been growing in recent years. We now catch a lot of 13- and 14-inch smallies, and north of the city limits fish up to 18 inches are caught more often. Cleaner water supporting more aquatic life, warmer winters, and a general increase in catch-and-release fishing may all be contributing factors.

Take a closer look now at some nice urban fishing.

Largemouth bass

Perhaps the most challenging place to catch largemouth bass in the Philadelphia area is the Delaware River. From the estuary to Trenton Falls, the lower Delaware is a tidal waterway. And tidal bass fishing is not easy.

The best largemouth bass fishing times on the Delaware are two hours before low tide and the first two hours of the rising, or incoming, tide. Because the tide change is a gradual movement up and down the river, it's possible to hop scotch along the Delaware, staying up with the key period.

Wissahickon Creek is an excellent stocked trout water that runs from the western suburbs into some of the most beautiful scenery in Philadelphia. Though its surrounded by an urban setting, you'd never know it when you descend the hills of Fairmount Park and wade in Wissahickon Creek. For some six miles, the Wissahickon is the most heavily stocked stream in Philadelphia.

Tidal changes, which change the river's water level, affect the movement of prey and game fish. At any one spot the waterline can change as much as eight feet. Anglers have to time their attack with the tides, and often follow the tide as it moves up and down the river.

When the river is at high tide, most of the flats and weed beds are submerged. So too are many incidental structures, like parts of docks, pipes and breakwalls. When the river is rising, prey and game fish move into newly covered structure. When the river is falling on a low tide, the aquatic life pulls back from these spots. Depending on the wind and moon phase, the shift from incoming to outgoing tide takes 30 to 60 minutes. If you're boating the river or its feeder creeks and see shore birds scouring wet areas, you can bet the tide is mostly out or just on its way in.

The best bass fishing times on the Delaware are two hours before low tide and the first two hours of the rising, or incoming, tide. Because the tide change is a gradual movement up and down the river, it's possible to hop scotch along the Delaware, staying up with the key period.

During the summer, the best places to look for bass are around main river structures. The fish are spread out and you'll find them around specialized cover. Oddly, the Delaware's scattered weed beds aren't the best places to catch fish. Bass certainly move into the grassy flats, but they seem to prefer hard structure, particularly man-made works like dock walls, moored ships and outlet pipes. Often I look for a bit of "swirling structure," places where currents are clashing, either visibly or invisibly. If I see a sheltered wood pillar surrounded by a whirl of water, that's the type of spot I want to work.

Access to the Delaware includes city-owned ramps at the intersection of Linden Avenue and 9100 N. Delaware Avenue, and two Commission ramps, the Tacony Access at Milnor Street and Princeton Avenue and another at the Frankford Arsenal Access in the 5600-block of Tacony Street. You'll find another access in Neshaminy State Park at Fourth Avenue in Croydon.

Smallmouth bass

The Schuylkill River through downtown Philadelphia used to be terribly polluted. But the river water quality has improved and some game fish populations are solidly entrenched. The habitat in the lower river still favors carp and catfish, but specific locations like the Fairmount Dam have solid numbers of smallmouths.

The best smallmouth fishing on the Schuylkill is actually in Montgomery County, from Manayunk north. There the Schuylkill tumbles over exposed rocks and ledges and is rich with deep riffles and rock-filled pools.

According the Commission Fisheries Technician Dave Miko, the drought of 1999 may actually have been good for the smallmouth bass population. In the "young of the year" survey, which measures the abundance of fingerling fish, the latest Schuylkill River findings shattered a previous record. Commission biologists discovered an astounding 23 bass fingerlings per 50-meter site. The previous high on the Schuylkill was in 1991 with 11 bass per 50-meter site.

But before you think that smallmouth heaven has come to the Schuylkill, realize that in 1998 the river showed an incredibly low 1.5 fingerlings per measured site. The findings reveal that not all the rollercoasters are at the Jersey shore.

In Philadelphia, access to the Wissahickon is along Germantown Avenue on the east and Ridge Avenue on the west. The stream is stocked from Germantown Avenue downstream to Lincoln Avenue.

Access to the Schuylkill River above Fairmount Dam is limited to a ramp on Kelly Drive operated by the Fairmount Park Commission. However, many anglers fish from shore all along the park. For boat access, you're best bets in Montgomery County are at Haws Avenue in Norristown and at Gladwyn. An easy-to-find launch is the Betzwood Access, located below the Betzwood Bridge and Route 442 just north of King of Prussia.

In the summer, you'll also find some stream smallmouth fishing in Wissahickon Creek from Chestnut Hill to the mouth of the Schuylkill. In fact, if you have a fly rod and only a few hours to kill, this is the place to go. This area is in the Valley Green section of the creek, off Germantown Pike. Smallmouth bass are available anywhere in that area.

Trout

An excellent stocked trout water runs from the western suburbs into some of the most beautiful scenery in Philadelphia. Though it's surrounded by an urban setting, you'd never know it when you descend the hills of Fairmount Park and wade in Wissahickon Creek.

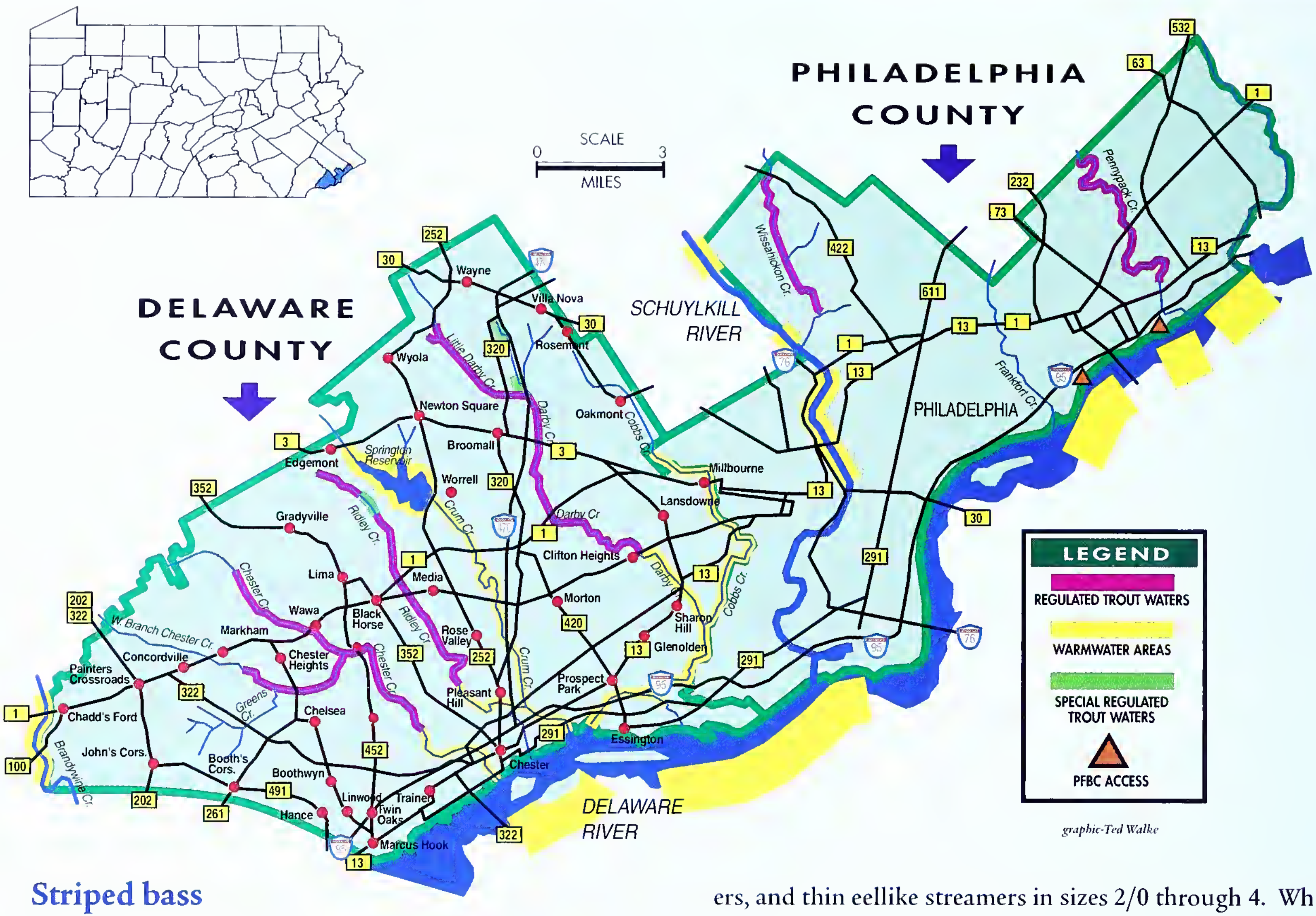
Once you get into the Wissahickon ravine, you'll be surrounded by both heavy woods and history. The stone bridges that cross the creek and the horse trail above one bank make it easy to walk to several great riffles and pools.

For some six miles the Wissahickon is the most heavily stocked stream in Philadelphia. The stream averages about 50 feet in width and consists mostly of riffles and pools that are two feet to four feet deep, but it also has some long, sluggish pools that can cover a grown man's head.

In Philadelphia, access to the Wissahickon is along Germantown Avenue on the east and Ridge Avenue on the west. The stream is stocked from Germantown Avenue downstream to Lincoln Avenue.

Another approved trout water in Philadelphia is the eight-mile section of Pennypack Creek, in the northeast. The stream is stocked from the county line to the Frankford Avenue Bridge.

Hardly a stone's throw from the city are Darby Creek and Little Darby Creek in Delaware County. Darby is stocked with trout from about Newtown Square to Clifton Heights. But don't forget downstream sections of Darby Creek for smallmouths and its confluence with the Delaware for largemouths.



graphic-Ted Walke

Striped bass

The striped bass fishing on the Delaware just keeps getting better and better. In the early 1980s when the Commission first endeavored to inventory the Delaware estuary for stripers and other species, the biologists were told they would not find any fish in the central Philadelphia area because of a lack of oxygen in the water. But, surprise, surprise, the first time out, Commission biologists found "tens of thousands of fish and fingerlings," according to Commission Area Fisheries Manager Mike Kaufmann.

And how things have changed. In October 1998, the Atlantic States Marine Fisheries Commission declared the Delaware stock of striped bass "restored to historic population levels."

Each May the Commission samples 21 electrofishing sites along the Delaware from the Commodore Barry Bridge to Neshaminy Creek. The survey is performed during the striper's spawning time, which ranges from April to early June.

In recent years, biologists have been finding an average of five adult stripers at each survey site, but as many as 100 have been captured at times. The stripers spawn across shallow beaches, gravel bars, rip rap and displaced concrete. Excellent fishing sites match these descriptions, but also include the tidal Schuylkill near Fairmount Dam.

The Delaware River striped bass respond to a variety of lures and flies. My favorites are white, wide-profile streamers, and thin eellike streamers in sizes 2/0 through 4. White bucktails fished quickly through the water are a surprise hit. Six-inch to nine-inch minnow plugs in chartreuse, perch and silver-minnow are standard. White spinnerbaits also provide some gut-wrenching hits.

American shad

With the deep waters of the Delaware River at Philadelphia, no one really fishes for shad there. Fishing starts above Trenton Falls, which is actually a series of rapids. But in recent years, very good numbers of shad have been caught on the Schuylkill River at Fairmount Dam under the shadow of the Philadelphia Art Museum.

A rich shad migration up the Schuylkill River at Valley Forge helped saved Washington's army after the disastrous winter. In fact, feeding the starving troops American shad may have saved the American Revolution.

Carp and catfish

On any weekend, you'll see anglers sitting on the banks of the Schuylkill River with stout rods and big reels. They're not going after the smallmouths or the sunfish that inhabit parts of the lower flow. They're after the big river carp and catfish that call the city home.

From the Philadelphia Art Museum to East Falls, anglers catch sizable cats and carp while enjoying the sights and sounds of the city. Shore access is excellent with Fairmount Park on the west side and Kelly Drive on the east.

Rigging for Drifting

by Mike Bleech

Drift-fishing is becoming a lost art in parts of Pennsylvania. Yet, it has advanced to new levels. Recent developments in drifting use specialized rigging to improve the accuracy and speed of lure and bait presentation. A "primitive" fishing method has become new again.

photo-Mike Bleech

Fishing from a drifting boat was one of the first logical, advanced fishing methods. It covers a lot of water without any great expenditure of energy. Before boat motors became common, drifting was the best way to cover water. Anglers could row, but that was a lot of work. Once most serious anglers had boat motors, though, drifting became too primitive for sophisticated anglers. Motor-trolling let anglers steer their boats wherever they wanted almost effortlessly.

Things tend to be cyclic, though. Every so often, things are reinvented. To younger anglers, too young to remember that not many anglers had motors for their boats just 30 to 40 years ago, drifting is a new method. In fact, it is new in many ways.

Last summer, a few friends and I made a few drift-fishing trips to Lake Erie. We did this with the express purpose of getting back to simpler fishing, away from trolling. As we examined our fishing gear, however, we realized that our drifting methods had become just as sophisticated as our trolling methods, and we used a lot of the same gear. We located the place we fished with sonar and then marked it with buoys. To control the angle of the boat in relation to the direction of the drift, we set the motor at an

Smallmouth bass generally do not care for anything fancy during summer. A live crayfish hooked through the tail on a fine-wire hook is probably the best offering you can use.

photos-Mike Bleech

angle and tied a drift sock to a specific spot on the boat. In-line planer boards, downriggers and custom-made weights spread the lines. We used baits with artificial lures to attract fish from greater distances than with bait alone. When we found a very productive area, we punched the location in the GPS so that we could return to the precise place.

Can't catch 'em where they ain't

Drifting is a pretty good method for locating fish. Today, though, anglers can shorten the searching process considerably with electronics. Several tools have been designed for locating fish. The most useful are temperature gauges and sonar.

Fish are cold-blooded creatures, so their activity is largely determined by temperature. During spring and fall, use a surface temperature gauge to locate the warmest water in lakes. This is generally where you will find the most active fish. During summer, use a temperature probe to find the preferred temperature depth range of the fish you hope to catch.

Sonar can help you locate both fish and the structure that holds fish. For drifting, you should look for structural areas instead of small pieces of structure. Instead of a hump, look for an area where there are several humps. Instead of part of a dropoff, look at the entire dropoff as a depth break line. Look for broad feeding flats.

Allegheny River at Warren. Drift-fishing with a river current is one of the most pleasant ways to spend a day. It's also one of the most effective fishing methods. Use oars or an electric motor to stay at the right depth.

Look for areas with scattered fish instead of fish that are congregated in a small area. I seldom make up my mind to drift before going fishing. The decision to drift should be made based on your observations once you are on the water. If fish are congregated by a small piece of structure, you should not drift. Anchor or hover over the fish using an electric motor.

Spreading the rigs

If you just lower lines that are rigged the same way over the side of the boat, you can use just a few lines without tangling. This is plenty in some situations, most notably when two anglers are getting all of the action they want with just two lines. This allows you to hold the rods in your hands, which is the most effective way to manage the lines. You feel everything that is going on at the end of the line if the terminal rigs are on the bottom. You can tell whether the bottom is soft or hard, or if you are bumping over gravel or boulders. You can detect even minor changes in depth. And you get the enjoyment of feeling fish strike your bait or lure.

But if fishing is slow, if the fish are scattered, you can cover a lot more water by using two lines per angler and spreading those lines using long rods, downriggers, planer boards and various terminal rigs. These line-spreading

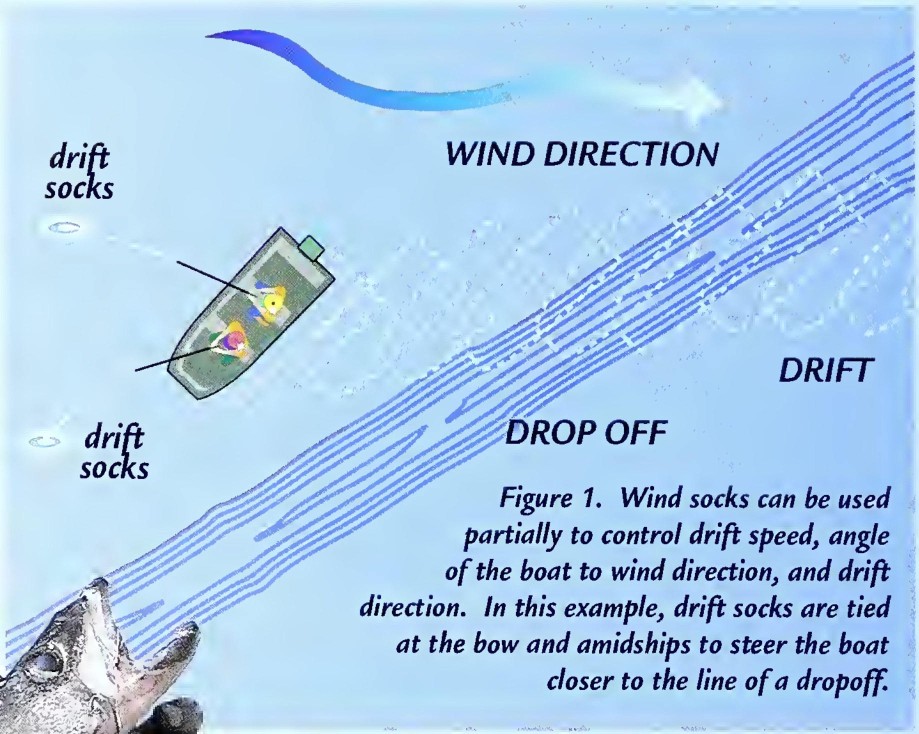


Figure 1. Wind socks can be used partially to control drift speed, angle of the boat to wind direction, and drift direction. In this example, drift socks are tied at the bow and amidships to steer the boat closer to the line of a dropoff.

tools also allow more anglers to drift-fish from a boat.

Boats must be equipped with several rod holders when several lines are drifted. Even if anglers think they can hold a rod in each hand, one rod must be set down to fight a fish on the other rod. But there is another reason for using rod holders that many anglers do not recognize. Anglers cannot maintain the position of rods as rigidly as rod holders can. They tend to lift and lower rod tips. Fatigue tends to pull rod tips back. This causes tangles. So if you are going to drift more than one line per angler, put all rods in holders.

Long rods are the easiest way to spread lines. If nine-foot rods are used instead or 6 $^{1}/_{2}$-foot rods, for example, in a 100-foot drift, and if each bait or lure attracts fish from a distance of five feet, then the nine-foot rods increase the amount of water covered.

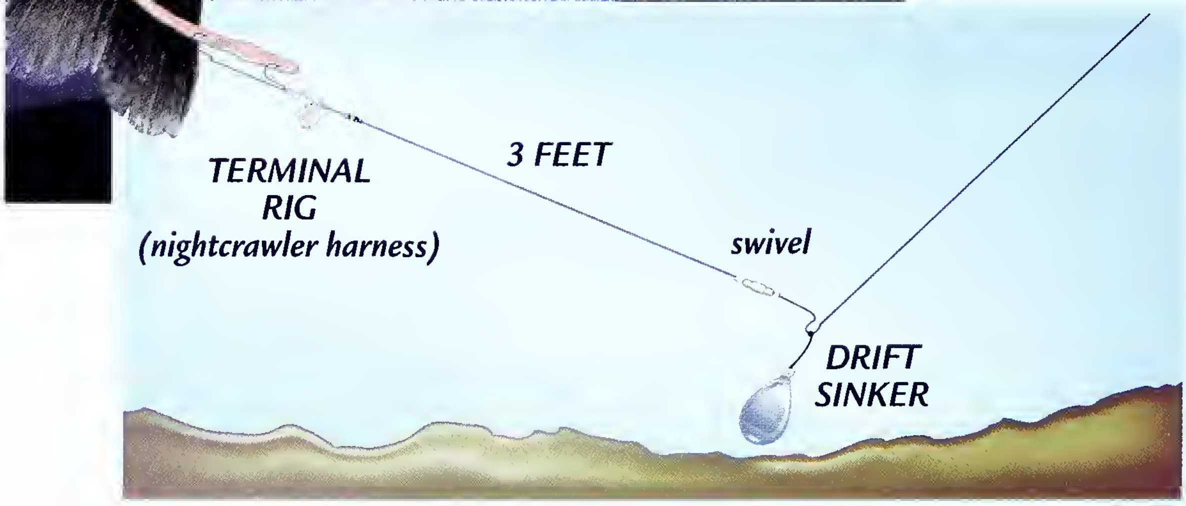


Figure 2. A wire-frame trolling sinker keeps baits and lures close to the bottom with minimal snags. Tie lures and baits at least three feet behind the sinker. A swivel between the leader and the sinker prevents the leader from twisting so badly that it loses strength.

photo-Mike Bleech; graphics-Ted Walke

The next step in spreading lines is to adjust the angle between the boat and the drift direction. If a boat is five feet wide and 16 feet long, by positioning the boat sideways to the wind instead of pointing it into or away from the wind, you increase the amount of water covered.

Run lines from planer boards and you can easily get lines 15 feet to either side of the boat, and maybe farther, depending on the drift speed. Planer boards do not plane as far or as straight from the boat as they do while trolling, which is done at greater speed. But just widening the spread with the boards 15 feet from the boat increases the spread, which certainly improves your odds considerably.

Terminal rigs

You have a wealth of options for baits and artificial lures while drift-fishing. However, these options are limited by the speed of the drift.

At very slow drift speeds, vertical jigging is my favorite way to fish. It allows me to keep the rod in my hands, which I prefer because I feel the strikes. Vertical jigging also adds an erratic movement to the lure, which is usually more effective than a straight drift.

As drift speeds increase, you can use crankbaits. Banana baits such as the Flatfish or Lazy Ike are excellent because they have action at very slow speeds.

Combinations of artificial lures and bait attract fish with odor, taste, color, movement and vibration. Harnesses for nightcrawlers, minnows and leeches, especially nightcrawler harnesses, are the standard lures of drift fishing. They are suitable for virtually any drift speed. Colorado blades should be used on harnesses for drifting because they spin at slower speeds than either willow leaf or Indiana-style blades.

Simple live bait rigs are sometimes more effective than anything else. Smallmouth bass generally do not care for anything fancy during summer. A live crayfish hooked through the tail on a fine-wire hook is probably the best offering you can use.

With any of these lures and baits, getting them in front of the fish is the key ingredient to success. This usually means getting the rigs close to the bottom. Several sinkers have been designed to drag over the bottom while drifting. Typically, they consist of lead cast onto a piece of thin wire. The springiness of the wire tends to bounce these sinkers over snags. I make my own using a lead jigging spoon mold. Built so the edge of the spoon blade cuts through the water, they run deeper than the more common drifting sinkers of the same weight.

Drifting sinkers should have swivels at their trailing ends, where the leader to the bait or lure attaches. Most baits, and obviously nightcrawler harnesses, put a lot of twist in the line. The trolling sinker will not spin, so all of the twist is in the leader. This can significantly weaken the leader in just a short time.

Rig baits or lures at least three feet behind sinkers. Drift sinkers are often painted to act as fish attractors. I believe the sinkers are more likely to scare fish. Many professional walleye tournament anglers now use sinkers that are attached to the line with an alligator clip. These sinkers are snapped sometimes more than 20 feet ahead of terminal rigs. They are removed while the fish is brought toward the boat. The only drawback to this system is that these sinkers are relatively expensive, and they can slip off the line on snags more than sinkers that are tied to the line.

Leadhead jigs tipped with bait might be the simplest terminal rig of all for drifting because they combine weight, color and bait in one unit, and they can be used with all but the fastest drifts and at most depths. The biggest disadvantage of jigs is that they tend to snag more often than wire-frame drifting sinkers.

Controlling the drift

The biggest drawback to drifting is that you are basically at the mercy of the wind or current. Of course, this is also part of the advantage of drifting–these same forces push food to fish. You are generally moving in the right direction while drifting.

But you are not completely at the mercy of the wind or current. Drift socks can be used to control wind-drifting speed, the angle of the boat in relation to wind direction, and to a small degree, drift direction. One drift sock, depending on size, can usually keep a boat drifting at a practical speed. If not, it is probably too windy to be fishing.

A drift sock is an adaptation of a sea anchor, a parachute-like tool used in deep water to keep the bows of boats headed into the wind, especially during storms. Boats can handle waves better if they enter the waves bow-first. You should keep this in mind if you drift in choppy water. However, drift socks can be used to control the angle of the boat in relation to wind direction in small to moderate waves.

Tie drift socks at the bow and stern to drift sideways. This allows more lines to be drifted than drifting with the bow into the wind.

Tie one drift sock to the bow and another amidships to align the boat at an angle to the wind. This causes the boat to drift slightly at an angle to the wind direction, which can increase the distance in which you are over fish. For example, if you want to drift over a dropoff but the wind is blowing at an angle to the right of the dropoff, tie one of the drift socks to steer the boat in the same direction you would turn if you were using the motor.

Electric motors

Ok, maybe it is not strictly drifting if you use an electric motor, but you can use an electric motor while drifting in river currents to reduce your speed. This keeps your lines in front of the boat or under the boat, and changes your speed in relation to the current enough to use artificial lures.

Electric motors can be used in wind drifts to stay on top of structure. Just use enough thrust with the electric motor to steer the boat and let the wind do the rest. The battery will hold out a lot longer than it would if you strictly trolled.

Lehigh River Court Case Tests "Navigability"

by Linda Steiner

Most property in Pennsylvania, including waterways and watersides, is owned privately, without legal doubt. Some places, like state forests, county parks, game lands and Fish & Boat Commission lakes and boat accesses, are unquestionably in some form of public ownership.

The area of public rights in Pennsylvania waters is a "gray area" in Pennsylvania property law. Questions about which waters are legally navigable and the public's rights to use them have sparked considerable litigation and debate. A recent decision by the Pennsylvania Superior Court has answered some questions about the status of one Pennsylvania stream.

On July 26, 1999, the Superior Court of Pennsylvania upheld a lower court ruling that the public "has the right to fish the bed of the Lehigh River for its length."

The controversy over whether or not the public has a right to use the Lehigh River, in all its parts, has been closely watched by the angling and boating public, as well as private property owners.

The incident that prompted the court case occurred in the spring of 1995, when an angler, John Andrejewski, began fishing in a section of the Lehigh River upstream of Francis E. Walter Dam, near the Great Falls of the Lehigh, in Luzerne County. Andrejewski had accessed the Lehigh through lands co-owned by his father. He fished waters that had been leased and stocked with trout by a private group, the Lehigh Falls Fishing Club, and posted against trespass. Members of the club told Andrejewki he was not permitted there; but the angler, believing the river was within the public domain, refused to leave. The stage was set for a court test of the navigability of the Lehigh, and public and private rights to the waterway.

In January 1996, the Lehigh Falls Fishing Club filed a complaint with the Court of Common Pleas of Luzerne County. As plaintiff it sought "a declaratory judgment that a portion of the Lehigh River, which traverses certain lands leased by it, is non-navigable, and that the public therefore has no right to fish in that portion of the river." The defendant, John Andrejewski, filed his answer with the lower court, "alleging that the section of the Lehigh River which traverses Plaintiff's leasehold interest is a navigable waterway, therefore open to members of the public, including the Defendant; and that Plaintiff therefore had no right to bar his access to that portion of the river bed "

In March 1996, the club petitioned the trial court for a preliminary injunction, and hearings were held in April. On April 26, Judge Ann H. Lokuta granted the preliminary injunction. The injunction ordered the defendant to stop entering and fishing the Lehigh on the club's property. It was evidently issued to prevent further on-site altercation between the parties.

The controversy over whether or not the public has a right to use the Lehigh River, in all its parts, has been closely watched by the angling and boating public, as well as private property owners.

Lehigh River below White Haven

The accepted test of navigability by the Courts of Pennsylvania is navigability, in fact, "when they [waterways] are used, or are susceptible to being used, in their ordinary condition, as highways for commerce."

The Superior Court of Pennsylvania reversed that injunction in October, saying that the club's right to exclude the fisherman from the leasehold area depended on whether the Lehigh River was navigable there. The court put the burden on the club of establishing the non-navigability of the river section it leased. A major court case was in the works.

Almost two years later, in February 1998, what court papers call "extensive testimony and voluminous exhibits" were presented to the Common Pleas Court of Luzerne County. The proceedings even included a visit to the disputed area with the counsels for the parties involved.

In summarizing the findings of fact in the case, Judge Lokuta noted that "historically, the Commonwealth of Pennsylvania has treated the Lehigh River as a navigable water and as a great river of the Commonwealth for its length. This use of rivers for transportation was natural in the early days of the Commonwealth, as overland transportation was expensive, difficult and only used for low bulk, high value items. Large bulk, low value goods moved by water."

About the Lehigh River itself and its history as a public waterway, the findings of fact in the case included that the development of the coal industry in the Lehigh Valley spurred efforts to improve the river "for commercial navigation for its length, from its mouth to the Great Falls at Stoddardsville." The river was the subject of "consistent and repetitive passage of legislation by the Pennsylvania General Assembly," before and after 1776, regarding improving it and other rivers of the state for navigation, because they were so important to trade and commerce. The area near Stoddartsville was the scene of massive timbering operations in the mid-1800s, and the river provided access.

A federal dam on the Lehigh, Francis E. Walter Dam, near White Haven, was authorized in the late 1940s and subsequently built by the U.S. Army Corps of Engineers. It blocked in modern times the ability to boat (or navigate) the waterway continuously, without at least portaging around the dam. That structure became part of the plaintiff's contention that the river was not navigable upstream of the dam.

Judge Lokuta wrote that "the question as to whether the Lehigh River [or any other water of the Commonwealth] may be considered to be navigable cannot, in the Court's opinion, be resolved by merely observing the river in its present state of being." At issue was whether, when the United States declared independence on July 4, 1776, the Lehigh was considered a navigable waterway, and capable of use by the public for transportation and commerce. Uses accepted in the doctrine of navigability include fishing and boating.

The accepted test of navigability by the Courts of Pennsylvania is navigability, in fact, "when they are used, or are susceptible to being used, in their ordinary condition, as highways for commerce." Judge Lokuta wrote that "if the Lehigh River met the navigability test at any point in its his-

photo-T. L. Gettings

tory, it remains a legally navigable waterway subject to the Public Trust Doctrine." The judge cited several court cases that reinforced that "a body of water once found to be navigable in its natural state is presumed to be navigable and forever free.'"

As for a dam having been built, a U.S. Supreme Court case had already decided that "the fact, however, that artificial obstructions exist, capable of being abated by due exercise of public authority, does not prevent the stream from being regarded as navigable in law." Judge Lukota said that "applying this standard to the present case, the [Lehigh] river must be viewed as it existed prior to the construction of Francis Walter Dam, i.e., in its natural state."

As to whether the Lehigh itself was ever pronounced a navigable river, Judge Lokuta's statement talked about a number of prior Pennsylvania Court cases, some dating to the early 1800s. One case, *Shrunk v. Schuylkill Navigation Co.* (1826) specifically says that "owners of land on the banks of the Susquehanna and other principal rivers, have not an exclusive right to fish in the river immediately in front of their lands, but that the right to fisheries in these rivers, is vested in the state, and open to all. It is unnecessary to enumerate at this time the rivers which may be called principal, but that name may safety be given to the Ohio,

"The rights of the Plaintiff [the fishing club] to the bed of the river are not clear and free from doubt... The defendant has the right to fish from the bed of the Lehigh River for its length," ordered the judge.

Monongahela, Youhiogeny (*sic*), Alleghany (*sic*), Susquehanna, and its north and east branches, Juniata, Schuylkill, Lehigh, and Delaware."

"In the view of the Pennsylvania Appellate Courts, therefore, the Lehigh River has been a navigable river and therefore open to the public for over two hundred twenty-five years," wrote Judge Lokuta. "Public rights in the navigable waters of Pennsylvania have been jealously protected by the courts," she added. Past court cases also confirmed that "between the ordinary high and low water marks the public retains a servitude or easement, to use the waters of Pennsylvania's navigable streams." Ownership by the Commonwealth included the submerged lands, in other words the underwater bed, of navigable rivers, according to past court decisions.

The plaintiff's contention to the court was that the construction of Francis E. Walter Dam rendered the river's upstream section, including the club's leaseholding, non-navigable, while only the section below the dam remained navigable. Judge Lokuta decided that "both sections can or could be traversed to the area of the Dam both downstream and upstream." In other words, both were navigable.

In its decision, the Court of Common Pleas recognized that the disputed area isn't currently used as "a broad highroad of commerce," but was "satisfied that the subject area of the Lehigh River is usable or can be made usable in such regard, and in any event, the bed thereof is Commonwealth property held in trust for the public."

Judge Lokuta concluded in her decision that the Lehigh was navigable, that natural obstructions that interrupt it (like the Great Falls) didn't destroy its navigability under the law, and that "the character of the navigable water is not changed by any subsequent economic or geographic developments." She specifically cited the Francis E. Walter Dam as not affecting the navigable status on either side of the dam. "The rights of the Plaintiff [the fishing club] to the bed of the river are not clear and free from doubt...The defendant has the right to fish from the bed of the Lehigh River for its length," ordered the judge.

Appeal

The Lehigh River's day in court was not over, though. Judge Lukota's decision was appealed by the Lehigh Falls Fishing Club to the Superior Court of Pennsylvania, in July 1998. Almost exactly one year later, on July 26, 1999, the Superior Court affirmed the lower court's ruling. The judges who decided were James R. Cavanaugh, Joseph A. Hudock and John P. Hester.

In the original court case, neither side sought to join the Commonwealth of Pennsylvania "as an indispensable party in interest," as Judge Lukota described it. She especially mentioned the Pennsylvania Department of Environmental Protection, which "the Court believes has standing, jurisdiction and interest in matters relating to the issues of navigation and navigability." The judge noted that the Court would have had the "benefit and guidance of the Commonwealth," if the Department of Environmental Protection had been asked to be a party, but she still believed the determination of navigability to be correct.

In his opinion for the Superior Court, Senior Judge Hester noted the Commonwealth's absence in the lower court. But when the case came before the higher court, several entities became involved as *amicus curiae*, or "friends of the court." In the appeal, the Department of Conservation and Natural Resources, the Department of Environmental Protection, the Fish & Boat Commission and the Pennsylvania Federation of Sportsmen's Clubs all filed *amicus curiae* briefs. Judge Hester said that "all four *amici curiae* support the trial court's conclusion that the Lehigh River is a navigable waterway."

Again at the Superior Court, the opposing parties agreed that navigable waterways are owned by the Commonwealth and held in trust for public use, while beds of non-navigable waterways are owned by the property owners of the land along the waterways. The central issue was whether the Lehigh River, including the contested section, is a navigable waterway.

Public river

The early court cases counting the Lehigh River as one of the state's public rivers were reconsidered by judges Cavanaugh, Hudock and Hester, including some discrepancies in wording between published versions of the court decisions. One of the arguments was that these cases looked at different sections of the Lehigh River than the one currently in question.

"We find this fact to be irrelevant," said Judge Hester. "Rivers are not determined to be navigable on a piecemeal basis. It is clear that once a river is held to be navigable, its entire length is encompassed."

"Since the Appellant's land is on the Lehigh River," wrote Judge Hester, "the public has the right to fish on the portion of the river located through its land...Order affirmed."

In closing, Judge Hester commented that "the relevant case law necessarily is old since the issue of what rivers are public rivers became important early in the history of our

Commonwealth." With the recent decision, future courts will have one more definition of what navigability means, and the public's rights to navigable waters.

PA Supreme Court

The plaintiff has one more level of Pennsylvania court that can be appealed to, the Supreme Court. The Supreme Court is Pennsylvania's "court of last resort," in matters of law. Like the U.S. Supreme Court, the Pennsylvania Supreme Court can exercise discretion in accepting or rejecting most appeals, which allows it to devote greater attention to cases of far-reaching effect. The Lehigh Falls Fly Fishing Club has asked the Pennsylvania Supreme Court to review this case. A decision on whether this case will be subject to further review is pending.

Joseph Neville, former Executive Director of the Pennsylvania Federation of Sportsmen's Clubs, observed that the final conclusion may not be reached for a year or more. "We're hoping the Supreme Court will look at the decision and say it's correct," said Neville.

What ramifications will the Lehigh River navigability court case have? It's unclear what, if any, effect the decision will have on determining the navigable status of other waters, because the decision is specific to the facts about the Lehigh River. That case involved some unusual features, including a dam and a waterfall that "divided" the stream. The Fish & Boat Commission web site (www.fish.state.pa.us) has the full text of the case, and it is also available in .pdf format from the Pennsylvania Courts (www.aopc.org).

Although the public has the right to fish, boat, wade and otherwise use state navigable rivers, no one has the right to trespass across property to access that river. Private landowners' ground adjacent to navigable rivers should always be respected, and private property owners should respect the public's right to be in or on the navigable river that flows by their land.

The Commonwealth has no comprehensive list of its navigable waters, according to Dennis Guise, Esq., Fish & Boat Commission Chief Counsel, and the determination of whether a stream qualifies as navigable waters often is difficult. Historical evidence, legislative enactments from early days of the state and scientific information can be useful in making the determination. "Neither the Fish & Boat Commission or the Department of Environmental Protection is authorized to make navigability determinations," said Guise. "As a result, parties disputing the navigability of a particular stream or river may have to go to court, which can be an expensive and time-consuming process."

Wildlands Conservancy Buys Disputed Tract

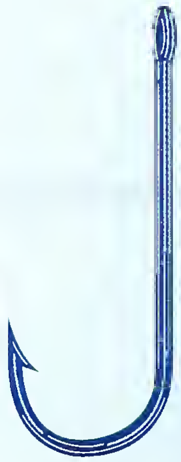
Ironically, while the court case regarding the Lehigh River's navigability was dragging on, the land in question, called the Creveling Tract, was sold to the Wildlands Conservancy. The conservancy obtained about 660 acres in Bucks Township, Luzerne County, abutting the Great Falls of the Lehigh. The property itself is mainly dry upland woodlands. A small portion of the land will be sold, subject to a conservation easement, with the remainder transferred to the Pennsylvania Game Commission. The purchase was made with what the conservancy calls the "kind generosity" of Mr. and Mrs. John Butler, of Blakeslee. Butler is a descent of the Stoddart family, which originally settled the area.

The Wildlands Conservancy can be reached at 3701 Orchid Place, Emmaus, PA 18049-1637; (610) 965-4397.–*LS*.

SMART Angler's Notebook

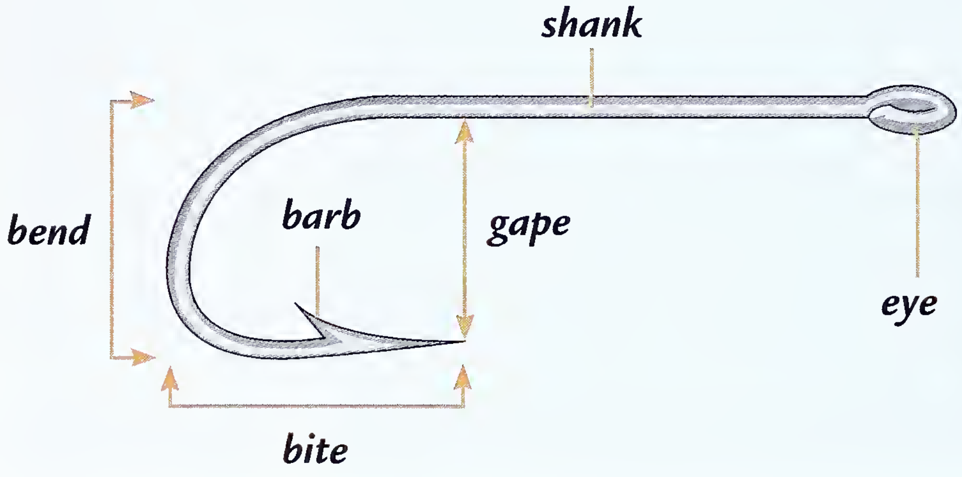
by Carl Richardson

Keep Those Hooks Sharp!



Get the point?

Your first "point" of contact with fish is the point of the hook. If the hook is sharp, you increase the chances of a good hookset. Solid and deep hooksets are critical to hooking and landing fish. Dull hooks take more effort to hit home. Why spend hundreds (or thousands, if you own a boat) of dollars to catch fish, and not do so just because of a dull hook?



Is it sharp?

There is an easy way to determine if a hook is sharp. Gently draw the point of the hook across a fingernail. If the point digs in and leaves a mark, it's sharp. If the hook doesn't leave a mark or won't dig in, it needs to be sharpened.

How to sharpen

There are likely as many gadgets and techniques for sharpening hooks as there are anglers. A small metal finishing file will do fine. In this method, you are filing three surfaces of the hook point.

✓ 1. Firmly hold the hook.

✓ 2. Draw the file across the barb toward the point. Repeat this stroke several times. Be sure to hold the file at the same angle each time.

✓ 3. Repeat these strokes on the other side of the point.

✓ 4. Make final stokes on the bottom of the point, forming a triangle-shaped point.

✓ 5. Test the hook for sharpness.

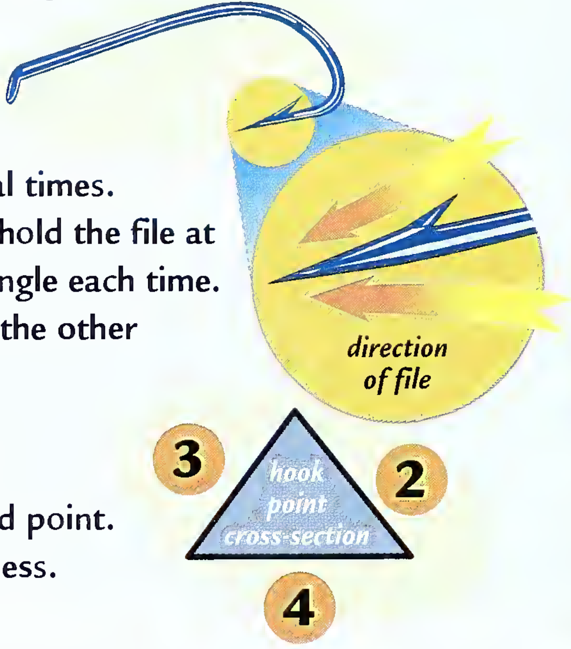


photo-Art Michaels; illustration and graphics-Ted Walke

Hook-sharpening tips:

1. Don't file too much or you will weaken the point.

2. Hooks will rust, so be sure to let them air dry. Don't store damp lures or hooks in tackle boxes.

3. Buy the best-quality hook you can afford. It will be money well-spent.

4. Rusted treble hooks should be replaced.

PLAY

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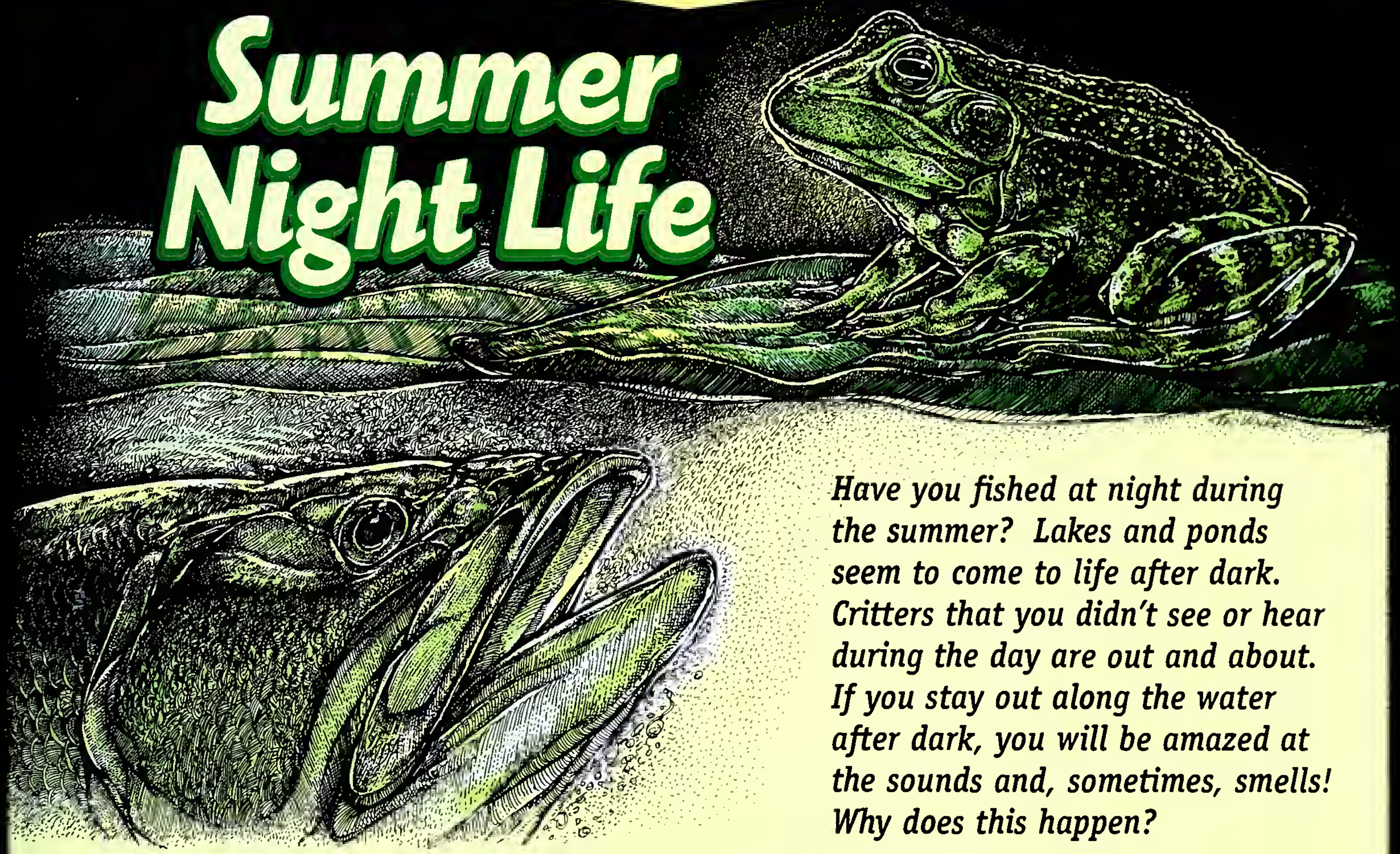
SUMMER 2000

Summer Night Life



Have you fished at night during the summer? Lakes and ponds seem to come to life after dark. Critters that you didn't see or hear during the day are out and about. If you stay out along the water after dark, you will be amazed at the sounds and, sometimes, smells! Why does this happen?

Some animals are nocturnal. Nocturnal animals are active at night. Animals like deer mice are active at night. They scurry around fields and grasslands. You might hear one in the grass around the pond. If it were out during the day, it would be visible to predators. But there are predators that are active at night, too. Owls are nocturnal. They have eyesight and hearing that are adapted for hunting at night.

Insects are also active at night. Mosquitoes, flies, crickets and katydids make their presence known on summer nights. These insects also avoid predators by being active at night. But nighttime insects are hunted by some nighttime predators-bats. Bats have a neat nighttime adaptation-echolocation. Bats send out a sound that bounces off objects and comes back. Combined with their excellent sense of smell, this makes them good nighttime predators.

Bullfrogs are active and call at night. The cooler nighttime air won't dry their skin. Like all nighttime animals, though, they have a predator. Largemouth bass can't resist frogs. If you doubt this, fish a plug that resembles a frog after dark on a summer night. Let the lure sit in the water and then slowly and gently retrieve it. Wham! The lure will get inhaled by a cruising bass.

Stay out after dark this summer. You might be surprised by what you see, hear or smell.

illustration and graphics-Ted Walke

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Fish Prints

Fish printing dates back to Japan over 100 years ago. Anglers made fish prints to record their catches and to save information on fish biology. The Japanese term for fish printing is "gyotaku" (pronounced ghio-ta-koo), and it is an art form that can be useful in other ways as well. Although this method of printing does not provide the best avenue for fish identification, it can be useful for learning external anatomy as well as recording a catch. The print can be made on a shirt, and you can wear your catch proudly!

MATERIALS

dead fish—bluegills work best
lots of paper towels
newspaper
paint—for paper
fabric paint—for t-shirts
brushes
paper–newsprint, rice paper or
construction paper

Note: If using fabric paint, carefully follow the directions. Washing the shirt before the paint is "fixed" to the shirt causes the paint to wash out.

PREPARING THE FISH FOR PRINTING

1. Wash the fish in water to remove slime and dirt.
2. Wipe the skin dry with paper towels.

PAINTING THE FISH

1. Place the fish on newspaper.
2. Paint the fish's body, working from head to tail.
3. Paint fins and tail last. Remember–a little bit of paint is better than a lot.

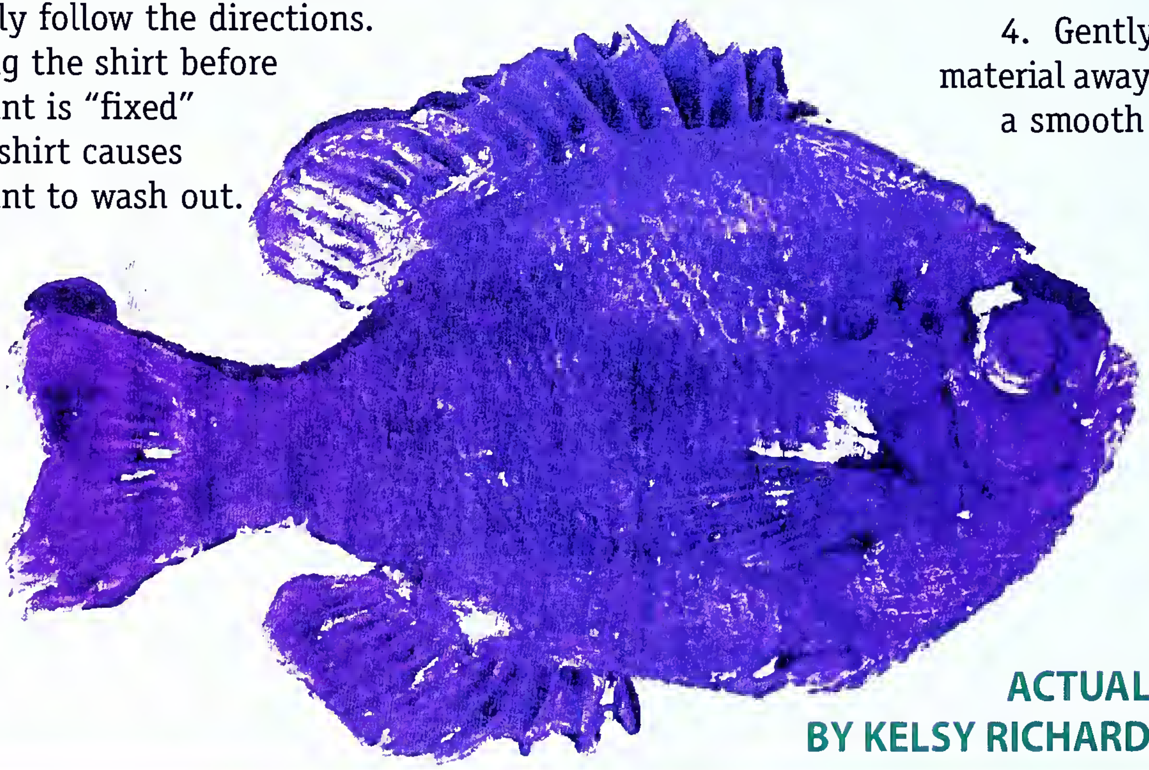
PRINTING THE FISH

1. Lift the fish and place a clean sheet of newspaper under the painted fish.

2. Gently place the paper or shirt right on top of the painted fish. If using a t-shirt, place a section of folded newspaper inside the shirt, between the front and back.

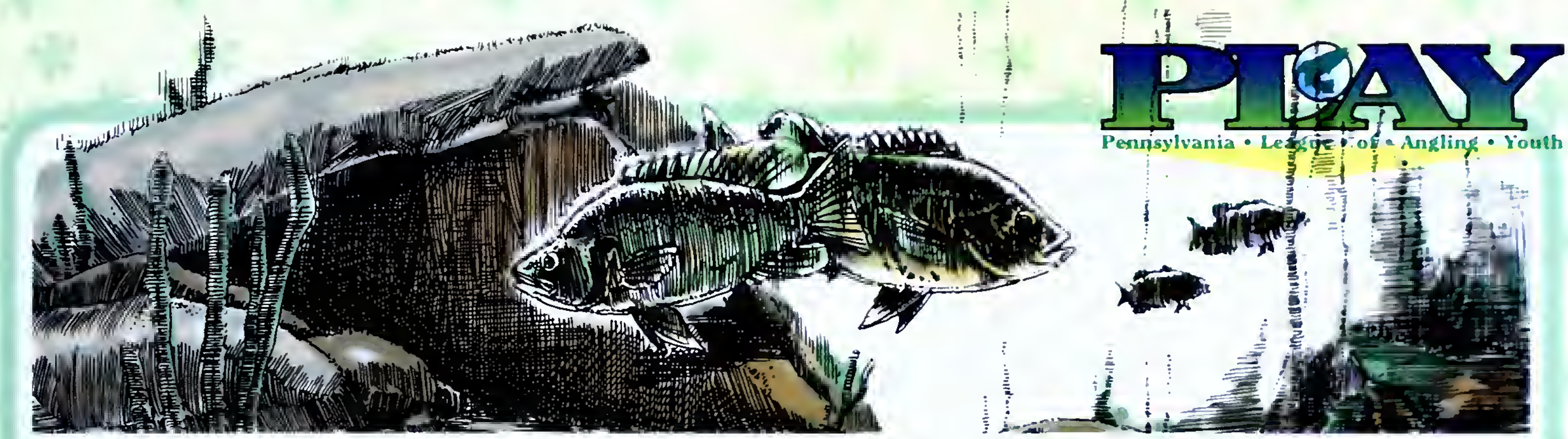
3. Press printing material firmly against the fish. Be careful not to move the paper or shirt because the paint will smear. Also, make contact with all of the fish.

4. Gently peel printing material away from fish with a smooth motion.



ACTUAL FISH PRINT
BY KELSY RICHARDSON, AGE 9

Adapted from 4-H National Sportfishing Program, Aquatic Ecology Curriculum, prepared by Mary Riley, Michigan State University, 1998.



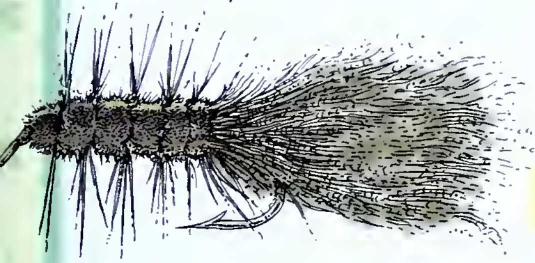
Fly Fishing, Without a Fly Rod

It's fun to catch fish on flies, especially a fly you tied. But maybe you aren't a good fly caster yet. Maybe you don't own a fly rod. Don't let that stop you! You can fish flies using your spinning or spincasting rod. You need only a casting bubble or a small bobber and a couple of flies.

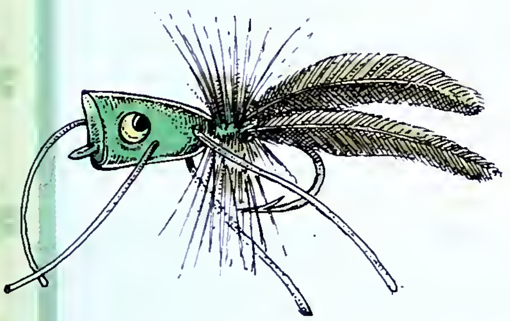
TIPS:

- Cast just beyond where fish are rising or swimming. Then reel slowly until the fly is just above the fish.
- Let the fly sit until the rings from the bubble have disappeared. Then begin your retrieve.
- Dry or wet flies can be fished with bubbles or bobbers.
- The distance between the bubble and the fly can be adjusted. For dry flies, keep at least 24 inches of line between the bubble and the fly. For wet flies, adjust the distance to match the depth of the fish.
- This technique can be used on streams and rivers, too.

Dry Flies

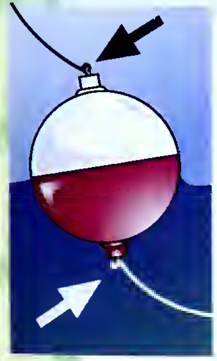


Wet Flies



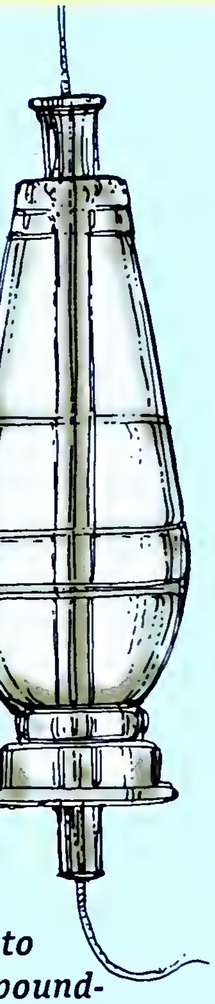
Poppers too!

Bobbers also work.



Here is how to rig a bobber. Put the line in both ends of the bobber's spring hooks.

HERE IS HOW YOU RIG A CASTING BUBBLE:



Two- to four-pound-test line, two to four feet in front of fly

illustration and graphics-Ted Walke

Bad-Weather Boating

Great weather can make a good day on the water even better. Bad weather can make a good day a disaster. Boaters must keep an eye to the sky, as well as on the water. Knowledgeable boaters know how bad weather can cause unsafe conditions.

Weather affects the condition of open water. Weather can change suddenly. Smart boaters check the local forecast the night before going boating and again in the morning.

Be alert to weather you can see. Signs that the weather may worsen include:

- ✓ Clouds gathering, darkening and increasing in size.
- ✓ Sudden temperature drop.
- ✓ Rapid wind shift or change in speed.
- ✓ Static on the AM radio, which might indicate an approaching thunderstorm.
- ✓ Drop in the barometric pressure (check a barometer).

IF A STORM IS NEAR

In a small boat, everyone not already doing so should put on a life jacket. The operator should head for the nearest shore and beach the boat, if necessary. It is best to find a shore on the downwind (leeward) side of the land.

Getting caught in the rain can make a boater miserable. There is nothing worse than being wet, especially if it's windy or cold. Cold, wet clothes can cause hypothermia. Lightning is probably the most dangerous part of a rainstorm. At the first rumble of thunder, or sign of lightning, drop your fishing rod and head for shore.

STAY SAFE, NO MATTER WHAT THE WEATHER BRINGS

To be prepared for bad weather, smart boaters:

- ✓ Always wear their life jackets.
- ✓ Dress properly and carry or wear rain gear.
- ✓ Check the weather forecast before they go on the water. Smart boaters don't boat if the weather forecast is bad.
- ✓ Never boat alone.

illustration Ted Walke

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Summer Night Life Word Search

N	S	L	M	W	F	A	A	H	C	R	H	S	M	F	A	D	L
B	U	L	L	F	R	O	G	I	O	R	O	R	R	L	E	I	F
E	U	N	R	Y	N	T	B	G	S	A	H	B	A	S	S	U	H
M	O	S	Q	U	I	T	O	C	N	B	K	T	A	D	T	E	H
E	C	E	L	D	U	D	L	H	M	O	T	E	N	E	T	N	M
S	C	R	E	E	C	H	O	W	L	S	A	L	R	L	O	T	E
W	T	W	I	R	A	H	V	H	O	R	X	D	E	I	A	S	E
A	N	W	U	H	T	E	O	I	D	F	C	E	B	R	U	O	A
P	L	E	L	F	B	R	R	P	E	M	C	O	R	H	N	L	N
A	I	O	I	T	A	U	E	P	O	A	T	O	O	U	M	H	R
B	E	E	O	I	O	I	X	O	Y	T	E	P	W	I	S	U	S
C	E	K	D	E	E	R	M	O	U	S	E	L	N	I	E	M	N
E	B	N	E	L	S	E	L	R	T	K	N	A	B	Y	I	D	I
P	R	H	A	T	Y	E	D	W	M	U	M	U	A	E	A	A	U
A	E	M	O	W	F	R	C	I	O	N	N	E	T	E	T	E	T
O	K	A	T	Y	D	I	D	L	M	K	H	H	H	A	A	O	U
C	R	I	C	K	E	T	E	L	E	E	O	S	N	H	I	D	N
R	O	T	A	E	S	P	I	E	E	A	S	R	T	R	E	N	I

BASS
BROWN BAT
BULLFROG
CRICKET
DEER MOUSE
KATYDID
MOSQUITO
SCREECH OWL
SKUNK
WHIPPOORWILL

Answers appear on page 31.

PLAY

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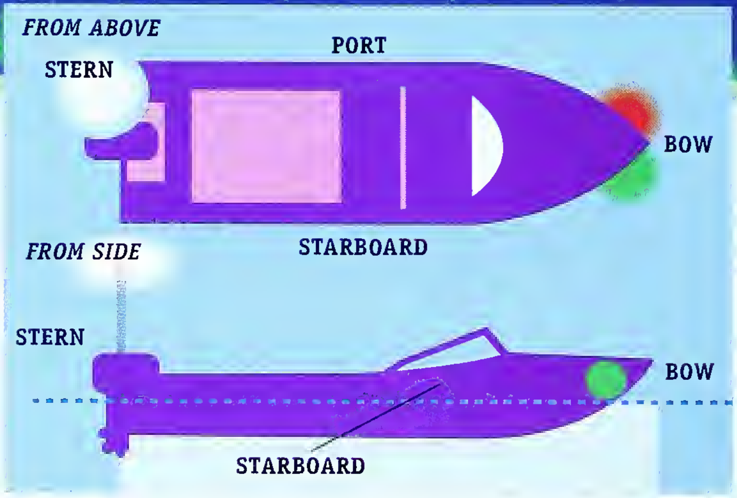
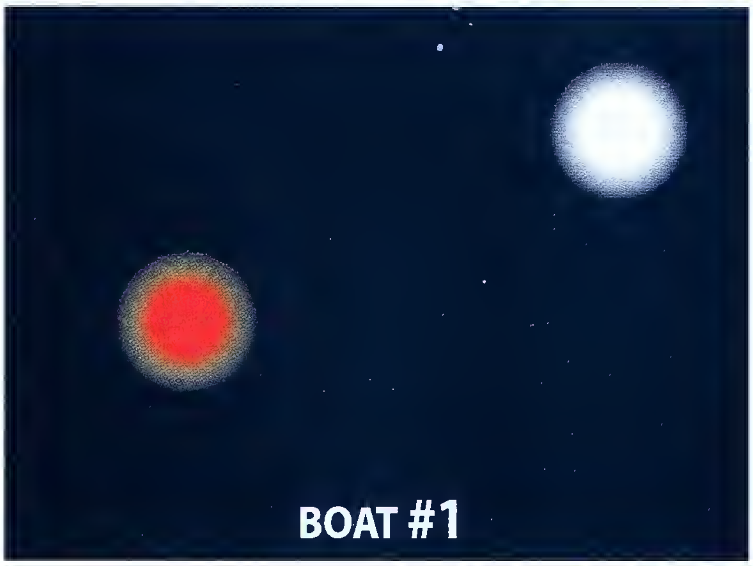
Night Lights

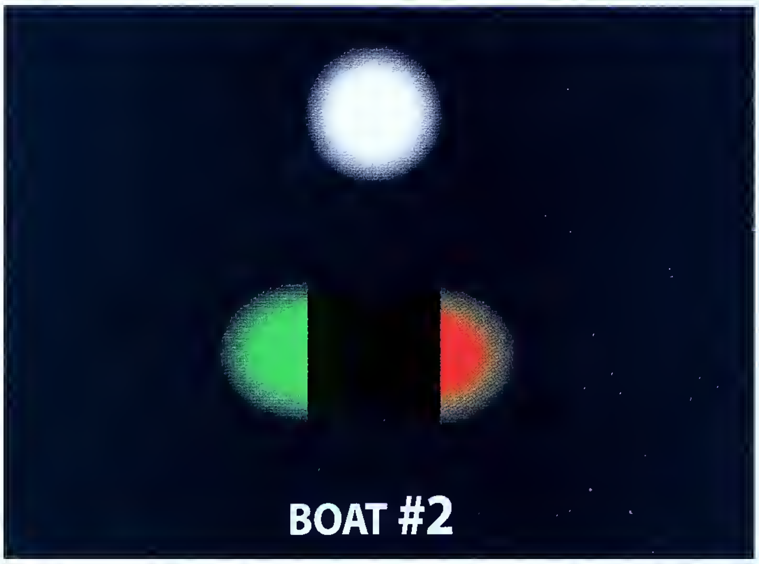


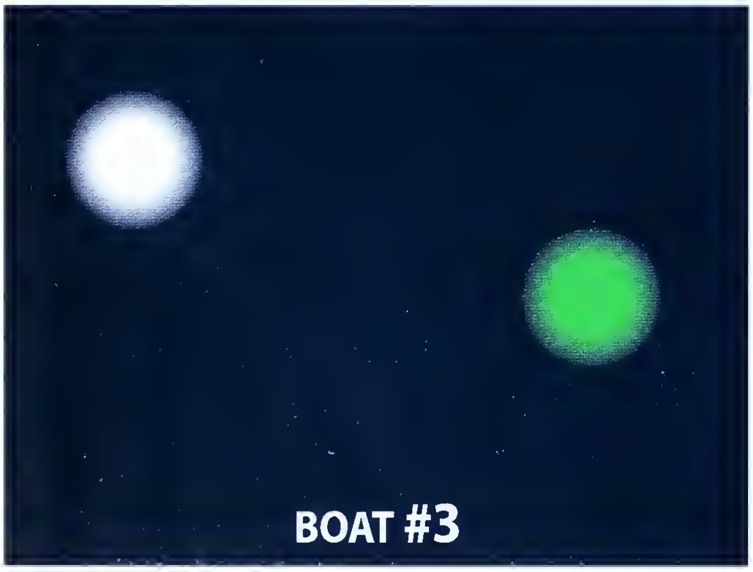
Boats operating at night, or when visibility is bad, must show running lights. These lights show other boats what kind of boat it is, and the direction in which it is traveling. They are also called navigation lights. Navigation lights are green, red and white.

The red and green lights are on the front, or bow, of the boat. The red light is on the port side. This is the left side of the boat when facing forward. The green light is on the starboard side. Starboard is the right side when facing forward. The white light is usually on the stern, or the back end, of the boat. It is called an all-around light.

Look at the lights below. Which direction are these boats going?


BOAT #1


BOAT #2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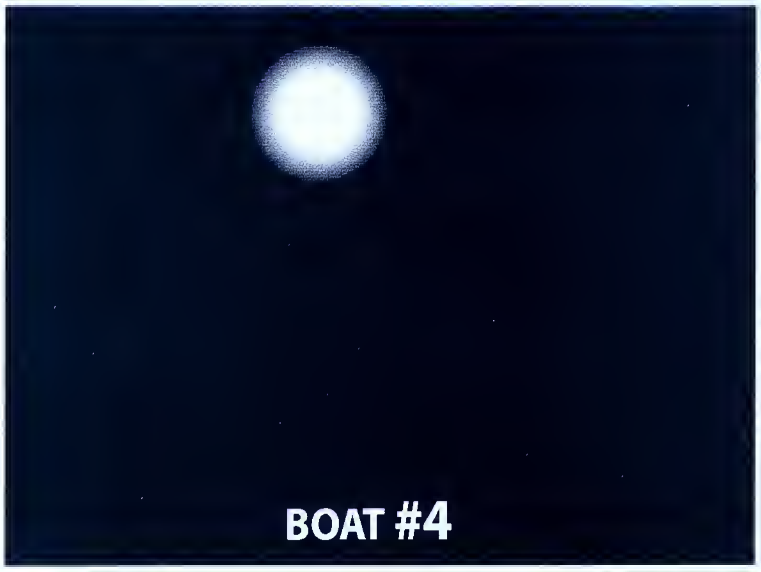
BOAT #4

What do you think would happen if boats didn't have navigation lights?

Answers: Boat #1 moving to your left; Boat # 2 heading toward you; Boat #3 moving to your right; Boat #4 moving away from you OR anchored–Boats that are anchored must display a white light.

graphic-Ted Walke

Prepare to be BOARDED!

Waterways Conservation Officers (WCOs) "board" boats. This means that they stop boaters on the water. Then they make sure that boats carry required safety equipment. They also make sure that boaters are obeying boating laws. They see if the correct number of life jackets is on board. They look for the boat's capacity plate, and confirm that the boat isn't carrying too many people or too much gear. In some cases, they ask to see the boat operator's Boating Safety Education Certificate.

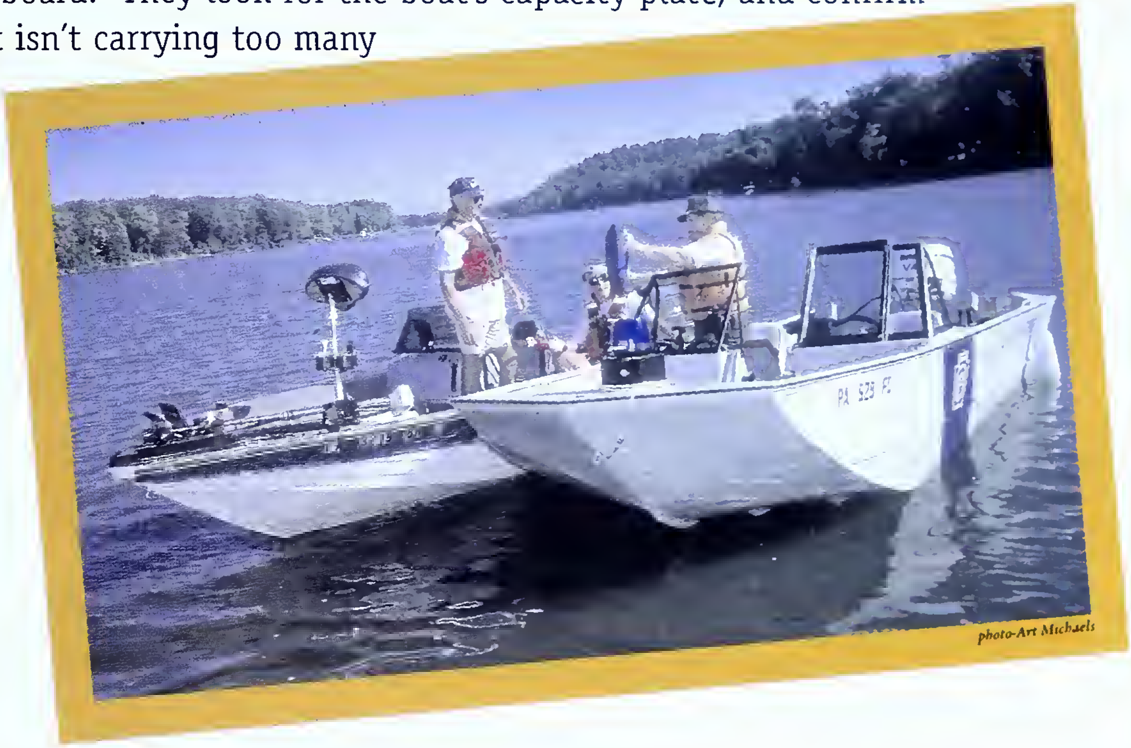
photo-Art Michaels

WCOs check everything this way to ensure everyone's safety on the water. Would you like to see if your boat complies with all the legal requirements? You can check the legal requirements in the *Pennsylvania Boating Handbook*. This 46-page book includes a summary of state and federal legal requirements in chapter 2. If you would like a copy of this free book, make a written request to:

Bureau of Boating & Education
PA Fish & Boat Commission
P.O. Box 67000
Harrisburg, PA 17106.

Summer Night Life Word Search Answers

N	S	L	M	W	F	A	A	H	C	R	H	S	M	F	A	D	L
B	U	L	L	F	R	O	G	I	O	R	O	R	R	L	E	I	F
E	U	N	R	Y	N	T	B	G	S	A	H	B	A	S	S	U	H
M	O	S	Q	U	I	T	O	C	N	B	K	T	A	D	T	E	H
E	C	E	L	D	U	D	L	H	M	O	T	E	N	E	T	N	M
S	C	R	E	E	C	H	O	W	L	S	A	L	R	L	O	T	E
W	T	W	I	R	A	H	V	H	O	R	X	D	E	I	A	S	E
A	N	W	U	H	T	E	O	I	D	F	C	E	B	R	U	O	A
P	L	E	L	F	B	R	R	P	E	M	C	O	R	H	N	L	N
A	I	O	I	T	A	U	E	P	O	A	T	O	O	U	M	H	R
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C	E	K	D	E	E	R	M	O	U	S	E	L	N	I	E	M	N
E	B	N	E	L	S	E	L	R	T	K	N	A	B	Y	I	D	I
P	R	H	A	T	Y	E	D	W	M	U	M	U	A	E	A	A	U
A	E	M	O	W	F	R	C	I	O	N	N	E	T	E	T	E	T
O	K	A	T	Y	D	I	D	L	M	K	H	H	H	A	A	O	U
C	R	I	C	K	E	T	E	L	E	E	O	S	N	H	I	D	N
R	O	T	A	E	S	P	I	E	E	A	S	R	T	R	E	N	I

How to Use a VHF Radio

photo-Thomas M. Kane

by Thomas M. Kane

More and more, the VHF radio is fast becoming standard equipment on all boats. Still not required by law for boats under 65 feet, the VHF (very high frequency) radio can be invaluable in an emergency. For hand-held as well as fixed-mount radios, the costs range from under $100 to just over $300.

In February 1996, the Federal Communications Commission (FCC) made it easier to own a VHF radio by not requiring an operator to have a license. Boaters who violate the FCC Communications Act, however, could be subject to having their radio privileges revoked. If repeated violations occur, the punishment may include fines or imprisonment. False distress or emergency messages, as well as obscene, indecent or profane language, are strictly prohibited.

Waterways Conservation Officer Martha Mackey said, "Not only does the Commission recommend having a VHF radio, we also instruct boaters on the proper use of the radio during our safe boating courses." Boaters talking with other boaters, hailing lock tenders, speaking with commercial vessels, and monitoring the marine weather station are all valid reasons to have a VHF on board. However, knowing the proper techniques to use a VHF, and properly summoning the Coast Guard for help, may just save your life someday.

To use a VHF radio properly, first turn your radio on and slowly adjust the squelch until the static stops. Make sure the volume is set at a comfortable level to hear messages over any surrounding noise. Set the radio to the low power setting (one watt), if that option is available. Place the microphone approximately one inch from your mouth. Press the push-to-talk (PTT) button and begin your message. If after broadcasting you get no response, try the high setting (25 watts).

Depending on who you're calling or hailing, radio techniques and channels differ slightly. Speak very slowly and clearly at all times. To assist with correct usage of the VHF, consider three common communication scenarios: boat to boat, boat to lock, and emergency calls.

Boat to boat

Channel 16 is the calling and distress frequency. With microphone in hand, call the boat you are hailing three times, and then identify your boat. Once the other boater receives and acknowledges your call, instruct the operator to switch to a working channel. Channel 68 or 69 is always a good choice. When you are through talking on the working channel, acknowledge the end of the conversation with your boat's name and say "out." Get in the habit of returning to channel 16 to monitor the frequency.

EXAMPLE

"*Target One, Target One, Target One,* this is the *Lindsay Ann*, over."

"*Lindsay Ann*, you have *Target One*, over."

"*Target One*, switch to channel 68, over."

"10-4. *Target One* switching to channel 68."

End your conversation by saying your boat's name and the word "out."

Boat to lock

Channel 13 is for commercial vessels and lock tenders. It's important to note that your boat must be in position at the "arrival point" of the lock before you call the lock tender on your radio. If you are not at or near the arrival point of the lock, the lock tender will not give you the estimated time for locking through.

The lock tenders also find it helpful if you tell them what type of boat you are in. Military boats, mail boats, commercial passenger boats and commercial tows or tugs all have priority over pleasure boats.

Your VHF should be set on the low power setting. If you have never been through a lock, or if you require assistance, inform the lock tender when you call.

EXAMPLE

"Pleasure craft *Lindsay Ann* calling Allegheny Lock & Dam #2, over."

"Go ahead pleasure craft *Lindsay Ann*, this is Lock & Dam #2, over."

"This is the pleasure craft *Lindsay Ann*. I'm in position north of the dam and I'm trying to get an ETA (estimated time of arrival) for a southbound lockage, over."

"*Lindsay Ann*, it's going to be approximately 20 minutes before we can get you in, over."

"10-4, *Lindsay Ann* out."

At this point, you'll need to wait until you receive the appropriate signal to enter the lock.

Calling for help in an emergency

Use channel 16 when you need help. The Coast Guard monitors this channel 24 hours a day. Reserve "mayday" only if grave and imminent danger exists: Your boat is taking on water, there's a fire on board, a person is overboard, there's been a collision, or someone on board has a serious injury, for example.

"Mayday" is an international distress signal. It comes from the French verb *m'aidez*, which means "help me."

EXAMPLE

"Mayday, mayday, mayday, this is the vessel *Lindsay Ann, Lindsay Ann, Lindsay Ann*, calling the Coast Guard, over!"

"This is the United States Coast Guard. The vessel calling the Coast Guard go ahead with your mayday, all other vessels stand by, over."

"Coast Guard, this is the *Lindsay Ann*. Our location is ______(state your exact location). Our mayday is ______(explain the emergency), over".

"10-4 *Lindsay Ann*, we copy your mayday. What type of vessel are you in?"

"Coast Guard our vessel is ______________ over." (state size, color, etc).

"10-4 *Lindsay Ann*, we copy your vessel. Be advised help is on the way. All vessels in the vicinity of the *Lindsay Ann* are asked to assist if possible. This is the United States Coast Guard, out."

When you call for a mayday, not only will the Coast Guard respond, but other boaters who are monitoring the frequency may respond as well. Channel 16 was initially designed only for emergency calls. Hailing another boater on this channel is allowed, but you must switch to a working channel once the other boater is reached.

In the event that you are unable to make contact with another boater, or person you are hailing, wait at least two minutes before trying to call again. Should you need to make a radio check for a newly installed radio, it must be done on any channel other than channel 16.

The advantage of having a VHF radio on board cannot be overemphasized. No matter what size boat you're in, a VHF radio should be on your safety checklist.

VHF Radio or Cell Phone?

photo-Thomas M. Kane

A cell phone lets you call other boaters who have cell phones and whose phone numbers you know. You can also call home to have dinner started, or call for help if there is a problem on board.

With 911 emergency call centers available in most cities, the cell phone can be effective if someone on board your boat becomes seriously ill or injured. You are now able to speak directly with a dispatcher and have rescue personnel or an ambulance meet you at a specified dock. However, on most waterways, you can reach the Coast Guard faster with a VHF radio. Furthermore, the range of a VHF radio is 25 miles. Cell phone range may be limited in some areas.

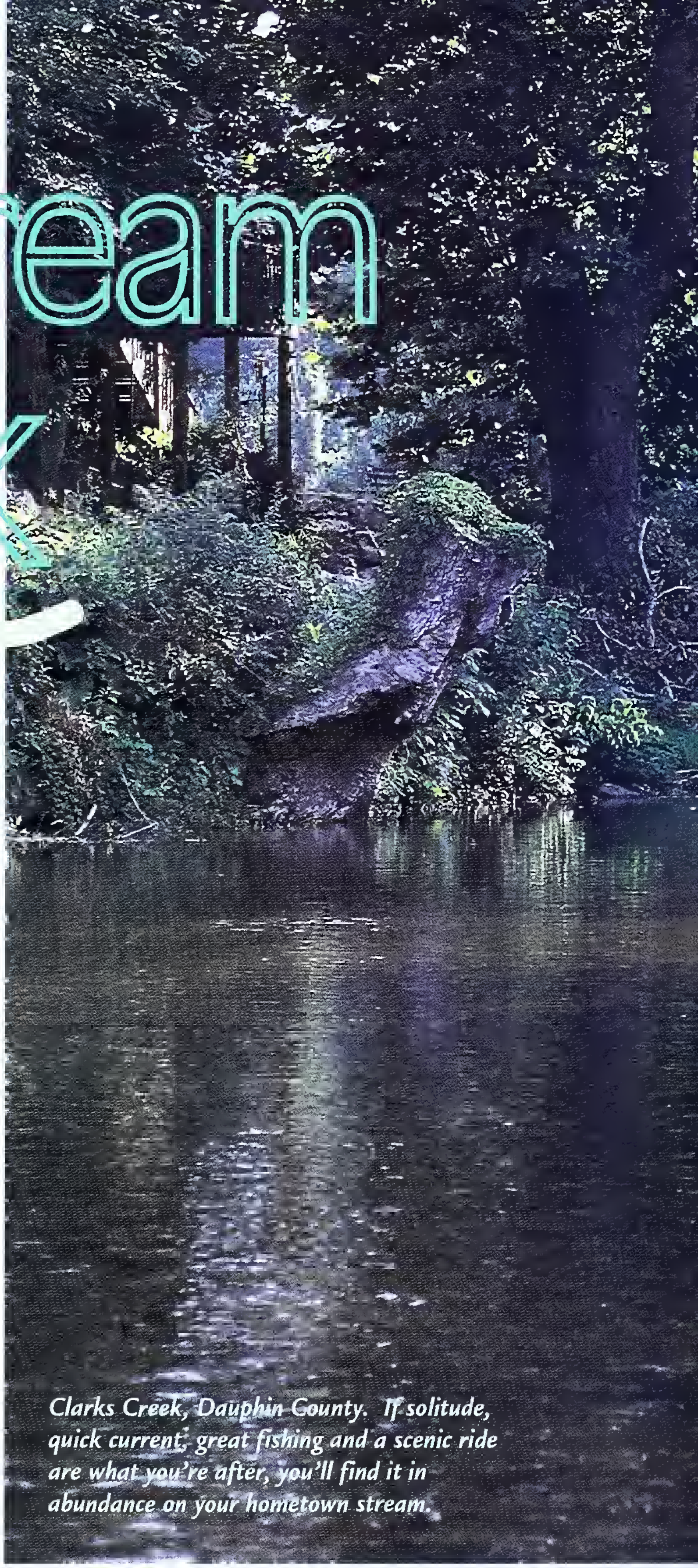
Although a cell phone can be a great asset to have on board, a slight advantage may still be with a VHF radio. If for no other reason, when you call for help over a VHF radio, other boaters who are monitoring channel 16 will hear the call for help, and may be able to assist you sooner than those who you call with a cell phone.

Even though arguments can be made for each form of communication, the ideal situation is having a VHF radio and a cell phone on board your boat.-*TMK*.

Small-Stream Work

by Cliff Jacobson

There are dozens–maybe hundreds–of wonderful canoe routes within a few hours (or minutes) drive from your Pennsylvania home. We're talking "small-stream work" here–shallow, fast-flowing, meandering streams and creeks where only canoes can go. If there's water enough to float a toy sailboat, there's water enough for your canoe.



Clarks Creek, Dauphin County. If solitude, quick current, great fishing and a scenic ride are what you're after, you'll find it in abundance on your hometown stream.

People? Avoid the first few weeks of trout season and you'll find far fewer people. Interesting rapids? Some trout streams drop more than 10 feet per mile, which, by canoeing standards, is really moving! If there's enough water–like after ice-out or a major rain–these streams can be quite challenging–even dangerous. But water levels drop fast, and the run is usually a piece of cake a week after a storm. Trout streams hold enough water in deep pools so that they can usually be run by competent paddlers throughout the summer. If solitude, quick current, great fishing and a scenic ride are what you're after, you'll find it in abundance on your hometown stream.

Dangers

Small streams are not like the programmed canoe routes, which are generally clear of downed trees and brush. Expect to encounter sweepers (downed trees that block the river) on the outside of major bends. These sweepers often run from bank to bank, which means you'll have to portage. Be prepared for barbed-wire fences, mini-dams and places where, well, the stream just stops flowing. Wading, dragging, lining and portaging are all part of the game, but it's an adventurous game you'll relish if you are well-prepared.

photo-Art Michaels

Battle plan

Where is the best place to begin and end the trip? We're talking more than good canoeing here: You'll need a safe place–access road, wide shoulder or private property–to leave your car. Will midstream blockages stop you cold? If so, how do you gracefully get around them? How many miles a day can you make without turning the day into an expedition?

If this were a programmed canoe route, a call to the Fish & Boat Commission, a local canoe outfitter or canoe club would provide knowledgeable answers. But you're on your own when it comes to many small streams. You can ask some anglers, of course, but it's doubtful you'll find one who has fished the entire route. Anglers can provide some useful clues when surveyed collectively.

Your best information is an accomplished canoeist who has done the stream recently. If there's a canoe club in your area, begin with that. Or seek advice from a local canoe/kayak shop. If there is none nearby, try a high-end mountaineering, backpacking or bicycle store. You're almost

Small-Stream Work

photo-Cliff Jacobson

Small streams are not like the programmed canoe routes, which are generally clear of downed trees and brush. Expect to encounter sweepers (downed trees that block the river) and other obstructions.

certain to find a staff member who canoes, or who knows someone who canoes. You'll hear back–probably within the week.

Prepare yourself with appropriate maps. I carry a county map and a topographic map. Given today's wonderful technology, I also bring a GPS, though it's not really necessary. The topo tells me the location of rapids, falls and dams and the hills I have to climb. The county map shows man-made features–places I can drive to and park my car. My GPS indicates my precise position on the stream, a nice thing to know if the route deteriorates and I have to walk out.

Ultimately, you'll discover that no matter how much information you have about your stream, you can never have enough. That's because the stream bed changes with every passing rain–and significantly, each season. Don't be surprised if you discover that what was an easy float last year is a long drag or portage this year, or vice-versa. The bottom line is that small-stream work is an adventure.

Timing: About 15 or 20 miles a day is reasonable on a programmed canoe route where obstacles are limited to known rapids and groomed portages. But half that distance is a better plan on an intimate stream where you don't know what's around the bend.

It follows that your float plan should provide for some optional take-out points in the event that downed trees and debris prevent your finishing the proposed route. It's usually easy to get someone to shuttle you to your car if you have a smile and a ten-dollar bill.

If you have to hike out

There have been a few occasions where my friends and I have had to leave our canoes along the river and hike out. Usually, one person stays with the boats while another seeks help. I've found that this procedure produces the best results:

- If you have to seek a ride, wear your life jacket and carry a paddle. This way, you look like a canoeist instead of a bum. You are more apt to get a ride if you are alone than with a friend.
- If you have to leave your canoe in the bush, attach a note to it saying where you're going and when you'll return. Include a phone number where you can be reached.
- Don't leave pack sacks, paddles, cameras or other pricey gear in the canoe. These items are much more likely to be stolen than the canoe. If you must, you can usually hide gear in the woods nearby.
- Carry a plastic-coated bicycle cable and lock. Run the cable around the seat and lock the canoe to a nearby tree. It's not hard to unbolt the seat and steal the canoe–but you need a wrench and time. I've never had a problem.

Canoes

Kevlar canoes take a beating on small streams, so leave your pricey cruiser at home. Solo canoes, which pivot on a penny, are the exception. Still, you will get deep scratches. For most people, a Royalex or polyethylene boat is a better way to go. Aluminum canoes won't hang up on rocks if you apply a thick coat of paste wax to the bottom–an old trick used by whitewater daredevils in the days when everyone paddled metal canoes. For twisty stream work, a high-riding 15- or 16-foot tandem canoe is best. Of course, any canoe will do if you paddle it well.

The canoe should be outfitted with a comfortable carrying yoke (you may have to portage!) and 15-foot lines at each end. Ropes should be coiled and secured under a loop of shock cord on deck. Lines are essential if you have to wade and drag your canoe.

You can bring your pricey bent-shaft paddle if you like, but a straight-shaft paddle is handier for tight maneuvers. A durable tip (for pushing off rocks) is essential. Long paddles are out of place in shallow water where you'll be lucky to submerge the blade. Choose a wide (8 to 8 $^{1}/_{2}$ inches), short-bladed paddle for shallow water; long, narrow blades are best for lakes. A paddle of 54 to 56 inches is a good length for a twisty river paddle. If in doubt, err on the short side.

I might add that you should never use the grip of your paddle to push off rocks. A dented or slivered grip produces blisters. Use the blade if you must push off with your paddle.

✓ Important gear

Don't be lulled into believing that the morning conditions represent the entire day's weather. Here's what I carry on my exploratory floats:

- ☐ **Two paddles per person**–one lightweight bent-shaft, one durable straight-shaft.
- ☐ **Two-piece rain suit and waterproof hats.**
- ☐ **Wide-brimmed canvas hat for sun and a lightweight wool or acrylic stocking cap.**
- ☐ **Footgear:** Most summer paddlers wear running shoes and wool socks. Wading in bitterly cold water requires a switch to neoprene wetsuit socks or calf-high Gore-tex® socks. Some swear by sandals, but I swear at them: My toes get stone-bruised and bug-bitten. Nylon "reef-runners" are another cool summer option, but they don't offer enough support for portaging.
- ☐ **Lightweight gloves**–I bring acrylic with "a rubber dot."
- ☐ **Light fleece or wool sweater and porous nylon windbreaker with a hood.**
- ☐ **Small first-aid kit in a waterproof bag.**
- ☐ **Swiss army knife or multitool.**
- ☐ **Matches and butane lighter.**
- ☐ **Sun screen and insect repellent.** Black flies are not discouraged by low strength repellents that work well for mosquitoes. You need real power–a repellent that has at least 25 percent DEET (diethylmetatoluamide) to bring them down. In early spring, when the flies are hatching, you may also want to bring a head net.
- ☐ **One brightly colored 20-foot-long, $^{3}/_{8}$-inch-diameter polypropylene (it floats) rope for each end of your canoe.** Coil the ropes and store them under a band of shock cord on deck so they'll be handy when you have to wade and line your canoe. Polyethylene takes a permanent set, so don't use it to tie your canoe on the car.
- ☐ **Large, absorbent sponge for bailing. A plastic bailer is handy if there are long rains or large rapids (cut off the bottom of a half-gallon plastic jug).**
- ☐ **Water bottles, soft drinks and snacks.**
- ☐ **County road maps, topographic maps, compass.**
- ☐ **Flashlight:** It's amazing how many trips begin in daylight and end in darkness.
- ☐ **Polarized sun glasses.**
- ☐ **Eight-by-ten-foot (or larger) ultralight nylon rain tarp** with aluminum stakes and 100 feet of parachute cord for rigging. If it's raining bloody murder when you stop for lunch, you'll be glad you brought a tarp.
- ☐ **Cell phone:** Carry it in a padded waterproof plastic box built especially for cell phones and GPS units.

photo-Cliff Jacobson

Frankly, you can get by with much less gear than I've suggested. Indeed, some of my most memorable trips have been spur-of-the-moment excursions. However, an attitude like this can get you into real trouble if the stream dead-ends or the day deteriorates to persistent heavy thunderstorms or icy rain.

There's a clear-flowing stream nearby. Grab your getaway pack and go. You're set for high adventure on a nearby stream.

Casting Lines

with Dave Wolf

Tale of Two Waters

The stream thermometer read 80 degrees. I had come in hopes of catching terrestrial-sipping trout–obviously that was not going to happen–not here, where only a month ago trout crowded the long glide of silk-threaded water.

A high afternoon sun and water temperatures that had risen above the trout's tolerance level were not good signs. I was at first disheartened; lately, my time spent on the water had been severely limited. Considering moving upstream, I clamored up the steep embankment that guarded the water–the embankment kept cattle from roaming near the stream.

The steep climb brought perspiration to my brow, and my right calf cramped. I became a little disgruntled and said aloud, "Well, this might be the only thing you catch today."

I sat on the eroding bank–a grassy spot that changed from green to brown clay, and I tried to straighten my leg to release the cramp.

While completing the release, I gazed somewhat painfully into the long glide of slow water below me. The polarized sunglasses let me see the dark forms, and then the outlines. Bass . . . smallmouth bass! As if they were renting an apartment, they moved in as soon as the trout moved out. What had been less than a comfortable home for trout was now downright pleasing to the bass.

Armed with what one would call a skimpy light-line outfit for trout, and without any bass flies, I found a hopper pattern in my box. I cut back the tippet and slid back down the embankment.

The hopper splattered on the surface. It drew a dark form and then less than a sipping rise. Bass are more akin to bar room brawlers than the more gentlemanly and ladylike populace of the trout world. And like greedy children who have yet to say, much less understand the word, "sharing," bass seem to want to be . . . no, insist on being, first at the dinner table.

The bass was a heavy fish, and with the light fly hooked to the edge of his mouth, it was able to put on an acrobatic performance that would put any Olympic team to shame. If beauty is in the eye of the beholder, then I had an eyeful of beauty in my hands. The bronzeback looked like a tarnished copper penny but with beauty in the dark lines that caressed its back. I slipped the hook loose with the forceps.

Standing on the lower reaches of a world-renowned trout stream, with shadowed bass moving before me, and with a smile on my face, it would seem I should be frowning because of the presence of bass in the wondrous world of the trout. These bass were fish that, to some, destroy the neighborhood and devalue the worth of the water. I know of many who would deny that they even exist here, because it is an indication that the water is not thoroughly cold and thus "pure." Bass are, to some, like those intent on destroying another's reputation. "Good trout water does not contain bass," is a long-held belief that does not describe many good Pennsylvania trout streams.

I think differently. A stream or river of significant length will hold bass, unless it's polluted. It's amazing. Consider the long list of "hallowed" trout waters: Penns Creek, Yellow Breeches Creek, Little Juniata River, Kettle Creek, The First Fork, Oil Creek, Valley Creek, to name only a few. In fact, very few streams extending over 16 miles long do not hold bass.

What this means is that we more than likely have as much bass water as we have trout water.

Most of our streams widen and become shallow as they flow. This means warming water, so on many streams we have the best of both worlds. Trout water in the upper reaches and tributary streams, and bass in the lower reaches.

Anglers view some streams, Penns Creek, for example, as excellent bass water, and to others, they're premier trout water. Both views are right. The point is that many anglers miss some excellent fishing for smallmouth bass. We have a mindset, at least I had, that bass belong over here and trout belong over there. Nature has proven that it really doesn't matter what we think.

Far too many medium-stream to small-stream anglers give up on fishing when summer arrives. They either quit fishing entirely or find a large river to prowl for bass. Perhaps that is why I find the downstream portions of streams so full of bass and void of anglers.

I don't complain about the latter, for as I cast again, yet another shadow rose from the depths, a long shadow of deep girth. The fish leaped onto the hopper pattern and turned tail to the flow. The fish jumped once, twice, three times before entering the weak riffle that led him around the bend. My reel, which I had forgotten to lubricate, screeched instead of sang. Line slipped through my fingers, and I was well aware that the bass was going to win this one.

In an attempt to follow, I stumbled along the streamside boulders, so inconveniently placed, and then fell. I recovered by bowing the rod to the fish as he leaped one last time.

I stood and looked toward the weak set of riffles, foaming white, bubbling and dancing. Within them, a bass turned to face upstream, perhaps resting behind one of many sheltering boulders. It was a good bass, even for a large river bass, and I thought of his fate in the smaller stream. He may not have felt the sting of a hook before, or he may never have had to leap high above those waffling riffles.

The single action reel coaxed in line with each revolution, and I was in no hurry. For on this stream, I stood alone. I was content to catch the shadows of the long glide, knowing that I was the only one casting here today.

Trout anglers were busy upstream and bass anglers were exploring the larger rivers. And like the smallmouths of the stream, I was filling a void somewhere between here and there . . . a task that I relished.

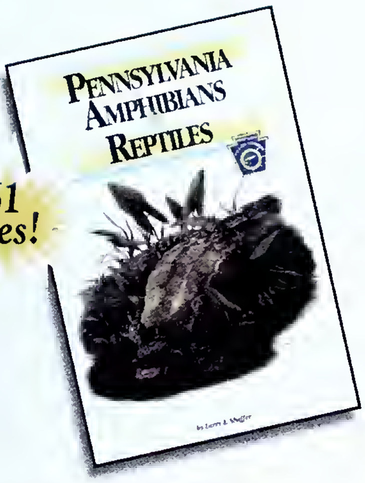
The line back on the reel, the hopper in hand, I found myself to be in a stream with two personalities–one warm, one cold. What a benefit! Drying the hopper, I cast back to the shadows beneath the flow of this stream with a split personality: One of trout and another of bass.

Products and Publications

Guide to Public Fishing Waters and Boating Access

This 96-page book, 5 1/2 x 8 1/2, lists by county the locations of Pennsylvania's public accesses with information on each access's services. Also listed are brief driving directions to each access. The book also lists Pennsylvania public fishing waters by county, including miles for flowing waters and acreage for impoundments and lakes, species available and nearest towns.

96 pages!



161 pages!

Pennsylvania Amphibians & Reptiles

This 161-page, 5 1/2 x 8 1/2, full-color book lists Pennsylvania's salamanders, frogs, toads, turtles, lizards and snakes. Each animal's account includes details on general characteristics, identification, range, habitat, reproduction and food. Range maps and full-color illustrations and photographs help anyone identify each species.

67+ species!

Endangered and Threatened Species of Pennsylvania

This book is 80 full-color pages and measures 8 1/2 x 11. The book includes details on Pennsylvania's endangered and threatened invertebrates, birds and mammals, fish, reptiles, amphibians and plants. The book was produced as a cooperative effort among the Fish & Boat Commission, Game Commission, DCNR Bureau of Forestry, and the Wild Resource Conservation Fund.

PFBC Fishing & Boating Map

The full-color folded map measures 37 inches x 22 3/4 inches flat. With the official Transportation Map, the map marks the locations of more than 900 fishing and boating accesses, lake and impoundment special-regulation areas, flowing water special-regulation areas, fish culture stations, universally accessible areas, Commission offices and pumpout stations.

900+ locations!

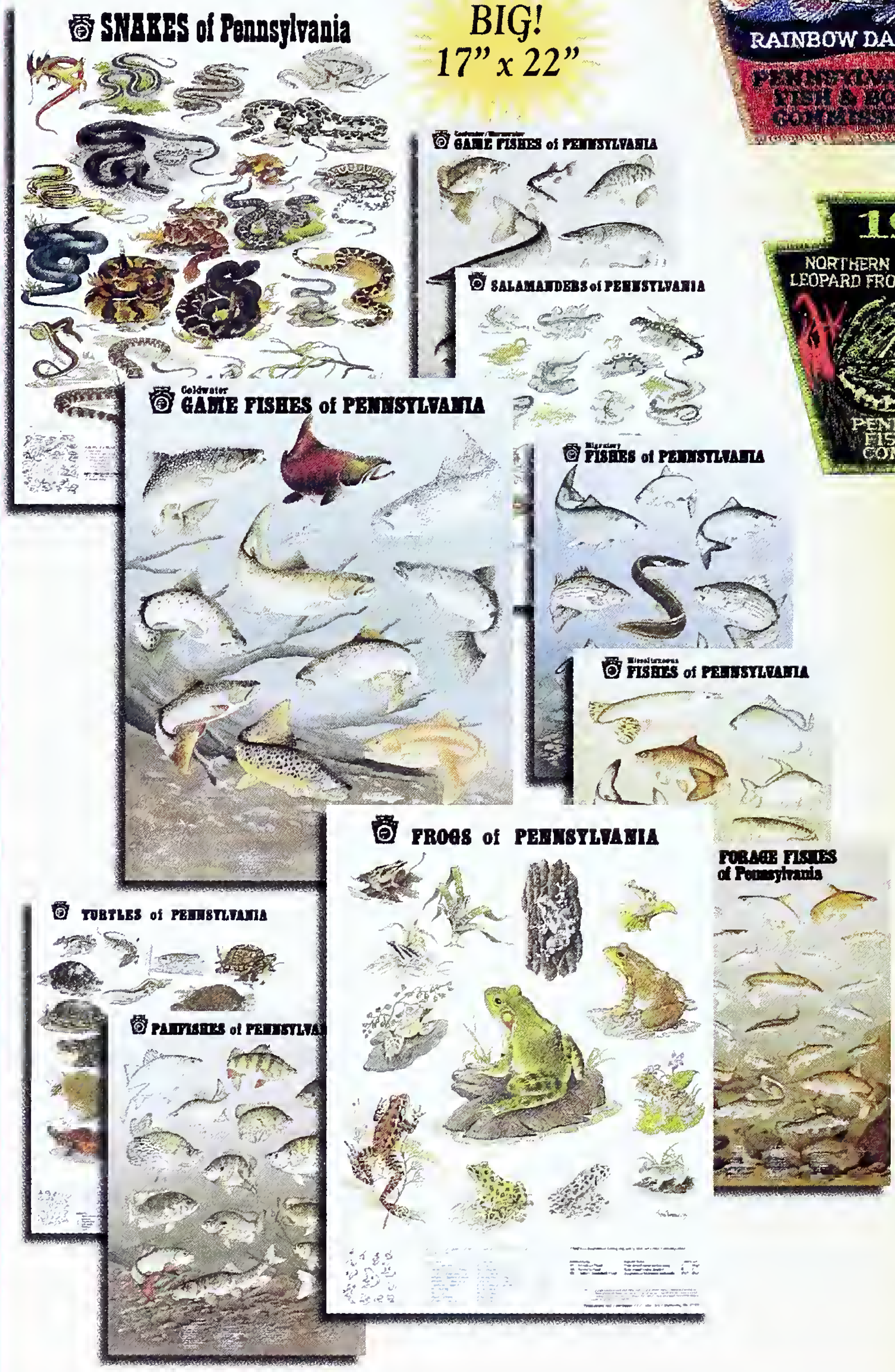
Products and Publications

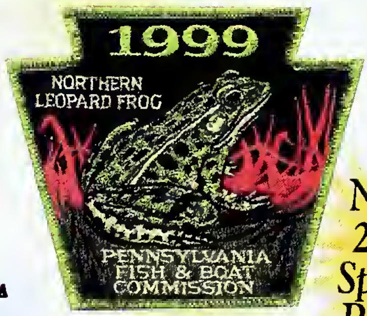
Limited Editions!

Wall Charts

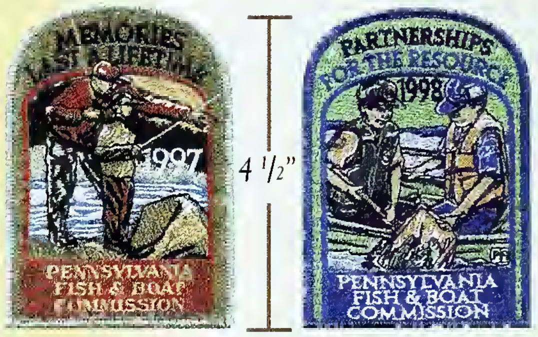
Each of the Commission's suite of 10 wall charts is printed in full color and measures 17 inches by 22 inches. Wall charts are printed on quality paper and are suitable for framing. Shipped rolled in tubes, not folded.

BIG! 17" x 22"


SNAKES of Pennsylvania
Coldwater/Warmwater GAME FISHES of PENNSYLVANIA
SALAMANDERS of PENNSYLVANIA
Coldwater GAME FISHES of PENNSYLVANIA
Migratory FISHES of PENNSYLVANIA
Miscellaneous FISHES of PENNSYLVANIA
FROGS of PENNSYLVANIA
FORAGE FISHES of Pennsylvania
TURTLES of PENNSYLVANIA
PANFISHES of PENNSYLVANIA



NEW 2000 Species Patch!


MEMORIES LAST A LIFETIME
1997
PENNSYLVANIA FISH & BOAT COMMISSION
4 1/2"
PARTNERSHIPS FOR THE RESOURCE
1998
PENNSYLVANIA FISH & BOAT COMMISSION

Commemorative Patches

Commission commemorative patches are limited-edition items. Nongame species patches help raise awareness of Pennsylvania's nongame and endangered fish, reptiles and amphibians. With PLAY patches, supplies are limited, and they are offered only while supplies last.

Pennsylvania Fish & Boat Commission Directory

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Location	On Harris Pond, Sweet Valley, PA
Southeast, Jeffrey S. Bridi, Manager	717-626-0228
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Location	On Speedwell Forge Lake
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Mailing Address	P.O. Box 356, Revere, PA 18953-0356
Area 7: Lawrence L. Jackson	717-486-3710
Mailing Address	195 Lebo Rd., Carlisle, PA 17013-9362
Area 8: Richard D. Lorson	814-445-3454
Mailing Address	236 Lake Rd., Somerset, PA 15501-1644

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Benner Spring, Paul V. Martis, *Manager*	814-355-4837
Mailing Address	1225 Shiloh Rd., State College, PA 16801-8495
Big Spring, Terry L. Farner, *Manager*	717-776-3170
Mailing Address	844 Big Spring Rd., Newville, PA 17241-9473
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Tionesta, Larry E. Hines, *Manager*	814-755-3524
Mailing Address	HCR 2 Box 1, Tionesta, PA 16353-9729
Tylersville, Kenneth L. Slogaski, *Manager*	717-725-3965
Mailing Address	RR 2 Box 173, Loganton, PA 17747-9734
Union City, Dennis L. Theuret, *Manager*	814-664-2122
Mailing Address	9450 Route 6, Union City, PA 16438

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Property Services, Bernie Kiesnoski	814-359-5108
Fishing & Boating Facilities Design, Richard Mulfinger, P.E.	814-359-5157
Engineering, David S. Bumann, P.E.	814-359-5190

State Headquarters:
1601 Elmerton Avenue, Harrisburg, PA 17110-9299
Mailing Address: P.O. Box 67000, Harrisburg, PA 17106-7000
World Wide Web: www.fish.state.pa.us

Allegheny River Wilderness Islands

by Janeal Hedman

The Wilderness Islands Water Trail is a 106-mile reach of the Allegheny River from Kinzua Dam to Emlenton. The unique character of this river section has prompted 86.6 miles to be designated as part of the National Wild & Scenic River System.

The scenic value of this river as it passes through three distinct landscapes puts it in a class of its own:

- The first landscape, between Kinzua Dam and Oil City, is a broad river valley with slow river eddies. Along the banks are farmlands, rural settlements, rustic cabins and river towns.
- The second landscape has a narrower valley with more than 100 islands. The undeveloped islands provide a more natural, undisturbed experience.
- The third landscape, below Franklin, has narrow, sharply winding valleys with steep slopes. This water trail section has nine sharp bends that nearly turn back onto themselves. It is the least developed section because of the steepness of the side slopes.

In addition to the scenic value of this portion of the Allegheny River, there are at least 75 prehistoric culture sites that deserve mention, including "Indian God Rock," a rock with prehistoric carvings at the river edge, south of Franklin.

Wilderness Islands

The U.S. Forest Service manages 29 of the more than 100 islands you pass on this water trail, seven of which are the Allegheny Wilderness Islands. The wilderness islands total 368 acres, making this wilderness one of the smallest in the nation. All of the islands are of alluvial origin, which means they were formed by water-carried deposits of sand, mud and clay. The wilderness islands are located along a 26-mile reach of the river between the Buckaloons Recreation Area and Tionesta. They are primarily vegetated by river bottom forests of willow, sycamore and silver maple.

The U.S. Forest Service manages 29 of the more than 100 islands you pass on this water trail, seven of which are the Allegheny Wilderness Islands. The wilderness islands total 368 acres, making this wilderness one of the smallest in the nation.

photos-Mike Bleech

Water Trail

The Allegheny River is often referred to as a gentle float trip–perfect for a beginner. Trips ranging from one hour to several days can easily be planned using local outfitters and public access areas. Although this river passes by wilderness islands, there is easy access by U.S. routes 6 and 62. You pass towns and residential areas along the river.

Because this river is dam-fed, its full length is usable by canoes and jetboats, and some portions also permit motorboat and personal watercraft use. Although you may encounter riffles and eddies in some areas, there are very few rocks to avoid and navigation is easy–a perfect choice for the novice canoeist.

There are many tracts of private land (islands and shorelines) along the river trail, so respect private landowner rights, and obtain permission from property owners before entering private land.

For more information

The U.S. Forest Service produces a map for the Allegheny River Islands Wilderness that provides a description of each island from Buckaloons to Tionesta. Contact USDA Forest Service, Allegheny National Forest, 222 Liberty Street, Warren, PA 16365; (814) 723-5150; or www.fs.fed.us/r9/allegheny. To plan your water trail vacation, contact Warren, Forest and Venango counties tourist promotion agencies:

- Northern Alleghenies Vacation Region, 315, Second Avenue, Warren, PA 16365; 814-726-1222; www.northernalleghenies.com.
- Forest County Tourism, need address, 16353; 800-610-6611; www.forestcountry.com.
- Oil Heritage Region Tourist Promotion Agency, P.O. Box 128, Oil City, PA 16301; 800-483-6264; www.usachoice.net/oilregiontourist.

Planning your trip

There are many activities to enjoy along the Allegheny River, including bountiful fishing, swimming and camping, ranging from developed sites, such as Buckaloons, to primitive camping opportunities on the Allegheny River islands. Canoe liveries and outfitter guides along the river are an excellent source of information.

Camping is allowed on most national forest land, including the 29 national forest islands between Kinzua Dam and Tionesta. However, some areas do not have suitable sites because of dense trees and brush on the high banks and wet, uneven conditions.

Buckaloons is a popular starting point for many canoeists. It's a developed U.S. Forest Service recreation area located six miles south of Warren on U.S. Route 62. A primitive camping area on state forest land, called the Allegheny River Tract, across from Kennerdell, is also a popular site. Contact local tourist promotion agencies or outfitters to assist in making accommodations.

Fishing is popular on this high-quality waterway. Many kinds of gamefish are available, including trout, smallmouth bass, walleyes, muskellunge and carp. Waterways Conservation Officer Bill Martin kept an Allegheny River diary throughout 1998 to learn more about the area. He discovered that the Allegheny River is one of the finest, most diversified fisheries he had ever seen. That diary is published in the September/October 1999 *PA Angler & Boater.*

Sights along the way

If you stay alert, a special treat may be in store for you. Bald eagles have returned to the area, and are frequently seen. Otters have been re-introduced, and you may see ospreys, soft-shelled turtles, great blue herons, kingfishers, common mergansers, mallards and beavers.

The Allegheny River is also home to small populations of clubshell and northern riffleshell mussels. Both of these mussels are sensitive to disturbance, and are federally listed and state-listed endangered species. You can do your part in the recovery of these species by not disturbing any mussels you may encounter, and inspecting your boat for "hitchhiker" zebra mussels from other waterways where you may have boated.

If you are moving your watercraft from one waterway to another, always drain the water from your boat. Remove any plants caught on equipment, and dispose of unwanted bait properly on land. Dry your watercraft and equipment for at least five days, or spray your watercraft and equipment with high-pressure water (a car wash works well), or rinse your watercraft and equipment with hot water (hotter than 104 degrees).

Travel routes, hazards

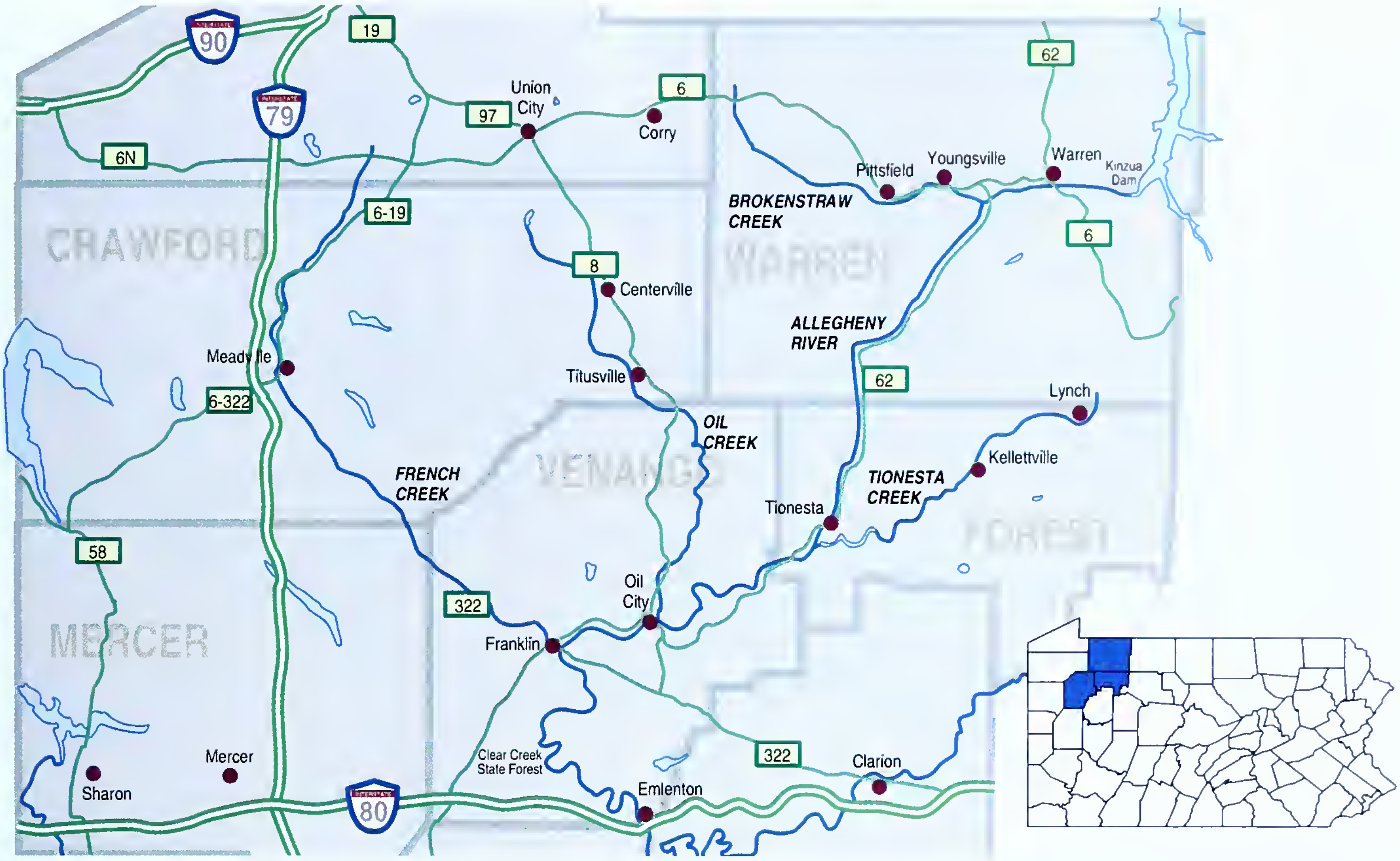
The easiest travel route is the main river channel. Traveling from Kinzua to Tidioute, there are some Class II rapids (riffles) downstream from the Glade Bridge (the first bridge coming into Warren). These riffles are about 150 yards long. When water levels are high, be aware of "strainers," or treetops that are submerged around the islands.

The only hazard for the remainder of the trip to Emlenton is in Oil City, under the Veterans Bridge (near the Holiday Inn). This area has a steep drop and fast water. Canoeists must be able to navigate quickly through an intricate rock arrangement. Most canoe liveries do not canoe through this area. Several local agencies are working together to create an area of smoother passage, while leaving a whitewater area for the more adventurous.

River level

This water trail is heavily affected by Kinzua Dam, operated by the U.S. Army Corps of Engineers, so there is always sufficient water to canoe. A good way to find out the water level for canoeing is to check the outflow of Kinzua Dam. Ideal water outflow is in the range of 1,500 to 3,000 cubic feet per second (CFS). The daily outflow can be obtained by calling the Corps office at 814-726-0164. Over 5,000 CFS is considered hazardous.

photo-Mike Bleech



Access Areas, Canoe Liveries

Access Name	*Developed/Undeveloped*	*Owner*	*Miles from Kinzua Dam*
Big Bend	D	Army Corp. of Eng.	0
Allegheny Outfitters	D	Fred Mendenhall 814-723-4868	6
The Point	U	Warren Borough	8
Crescent Park	D	Warren Borough	9
Clifford Betts Park	D	Warren Borough	10
Starbrick	D	PFBC	13
Buckaloons	D	USFS Allegheny National Forest 814-723-5150	15
Conklin Run	U	PGC	23
Perry Magee Run	U	PGC	27
Indian Water Canoe Rentals	D	814-484-3252	27
Bonnie Brae	D	PFBC	28
Tidioute	D	Tidioute Borough	30
West Hickory	D	PFBC	39
Tionesta	D	PFBC	34
Eagle Rock Enterprises	D	814-755-4444	44
Tionesta Island	U	Private	45
Outback Adventures	D	814-589-7359	45
Fox Run Canoe Rental	D	814-677-4092	51
President	U	Private	52
Justus Park	D	Public	66
Oil City	D	PFBC	67
Grand Rental	D	814-677-6091	73
Franklin	D	PFBC	73
Cranberry Township	U	Cranberry Township	73
Country Pedlar	D	814-432-8055	74
Allegheny River Canoe Rental	D	814-432-7644	75
Fisherman's Cove	U	PFBC	83
Emlenton Outfitters & Canoe Livery	D	724-867-8287	Unknown
Emlenton	U	Emlenton Borough	107
Foxburg	U	Private	111
Foxburg Livery & Outfitters	D	724-659-3752	111

"Can I Get There?"

by Heidi Milbrand

photo-Art Michaels

CONSERVE 2000
PROTECT PENNSYLVANIA'S WATERS

This is the fourth in a series of articles on the major topics of concern in the Commission's theme, "Conserve 2000." This feature explains some of the global, regional and local aspects of recreational access.

The Conserve 2000 program was designed to increase the protection of the Commonwealth's water resources. Fishing and boating access is vital to the enjoyment and, ultimately, the stewardship of our water resources. However, access is not limited to fishing and boating. Any outdoor recreation activity you participate in means that you need to get there–you need that access. Let's examine the effects of our access on wild places while considering our burgeoning population and increased demand on our wild resources.

A recent article in *PA Angler & Boater* described The Abele Memorial Glen. The glen honors the memory of Ralph Abele, executive director of the PA Fish Commission from 1972 to 1987. He was a man of vision, honor and integrity. This vision helped protect and preserve 430 acres of woodlands, stretched along a 2.5-mile section of Class A wild trout stream where Mifflin, Union and Centre counties come together. When this land was for sale, there were interested buyers from Philadelphia. However, none of the owners was willing to sell the land to them. The locals, as well as visitors, were glad the Commission purchased the land. They appreciated that nothing would be built there. This protected area allows hunters, hikers, anglers, canoeists, bikers and birders to enjoy the area's solitude, wildlife and beauty.

This acquisition by the agency provides people with access–recreational access–to a wealth of resources that Ralph Abele fought hard to protect.

"As a conservation agency, we believe strongly in the wise use of the state's natural resources. And the agency intends to keep on that track in our concern with the resources for which we are responsible. The misuse of these resources can have an adverse effect on the whole quality of life now and in future years," Ralph Abele said.

Embracing Ralph Abele's vision, people are beginning to recognize the importance of getting involved in their local land use, water use and planning decisions. Responsible land and water use has a direct effect on preserving land and protecting habitats and water quality. Public involvement, in the form of participation, cooperation and funding, is key to protecting and preserving land for us and future generations.

Pay...or else

What's happening in North America to gain more recreational access? At many national parks, fees are imposed to park at launch ramps, to paddle rivers, to view interpretive displays at visitor centers, and to hike into the backcountry. There are two sides to the fee issue, in this case, how much you are willing to pay to gain access to your favorite boat launch or walk-in fishing spot, or how much you are willing to pay to bike a trail or climb a mountain. The "good side" of this issue includes catching up on the facility maintenance backlog and knowing that 80 percent of the fees stay with the collecting agency and are funneled back into the recreation for which they were collected. The "bad side" includes the price. To paddle the Middle Fork of the Salmon River costs $5 a day per person. The cost is $140 for a family of four to spend a week on this undeveloped river, a river whose amenities are a wood ramp at the start, a cement ramp 100 miles downstream, and pit toilets at both ends.

According to the U.S. Forest Service, money collected will be used for a variety of river corridor improvements, includ-

photo-PFBC photo file

photo-Art Michaels

ing repairing launch facilities, resource protection, wilderness and environmental interpretation efforts, annual operations and resource mitigation. They will also ask waterway users for suggestions on how they should allocate the money. A river that had been wild and free is no longer free. Soon it may not be wild, either.

People used to think that wild space was infinite. However, that attitude is changing. Two examples of what people are doing to ensure that lands remain free for us and our future generations include the following:

- On October 24, 1998, to remind the government that paddlers want Ontario's wilderness protected, hundreds of canoeists and kayakers, armed with boats, PFDs and paddles, positioned themselves to form a giant pine tree in front of Queen's Park. Partnership for Public Lands organized the event, which included a coalition of the World Wildlife Fund, Federation of Ontario Naturalists and 39 other conservation organizations.

"The end of nature is in sight, with 40 million hectares up for grabs," said the event coordinator Ric Symmes. The partnership wants to protect 15 percent to 20 percent of government lands in northern and southern Ontario.

- In the late 1800s, 68,000 acres of virgin forest were bought. Now, part of that forest estate in the heart of the Adirondack Mountains has been added to the vast New York Forest Preserve. Acquired with money from the Environmental Protection Fund and the Clean Waters/Clean Air Bond Act, the 15,000-acre parcel opened in the summer of 1998 for motorless recreation activities. The area is the hub of a system of historic canoe routes used by early Adirondack explorers.

Conflict

Water is not exempt from the pressure of "limited access." In September 1998, the National Park Service (NPS) issued a notice of proposed rulemaking that would ban personal watercraft (PWC) on most NPS-administered waters unless the activity were specifically authorized. North Carolina's Cape Hatteras National Seashore and Georgia's Chattahoochee National Recreation Area are the most recent to take action this way.

Battles between PWC and other user groups extend far beyond national parks. Conflicts have erupted in all areas across the United States, including wildlife refuges, public lakes, rivers and coastal areas. While recreational groups, waterfront property owners and environmental groups are all trying to gain further restriction, the PWC industry is waging an increasingly defensive battle to keep these craft on the water.

The Commonwealth–for all people

Rich and diverse, the Commonwealth comprises 45,308 square miles of tree cover, agriculture lands, open and moving water, developed land, quarries and mineland. In Pennsylvania you can find just about anything to do and see. According to the 1990 U.S. Census, Pennsylvania has more than 11.8 million people living inside its borders. However, as our population grows, our resources shrink. A study completed in Chester County cited "more land in Chester County has been impacted by development in the last 25 years than in the previous 300 years!"

Pennsylvania is not exempt from the pressure for access to our natural resources. One historical way to preserve open space is to set aside public land and waters. Over the last 150 years, Pennsylvania has developed three major public land systems and one public water system–state parks, state forests and state game lands, along with state fishing and boating areas. State parks, managed by the state's Department of Conservation and Natural Resources, started its holding of public land in the early 20th century. Currently there are 116 state parks. The state forest system manages an additional two million acres of forest land. The Game Commission holds more than 1.3 million acres of public land. All of these lands provide preservation of natural areas and access to them.

The Fish & Boat Commission protects the state's waters and additional acreage as boating access areas. Just about everything we do affects our water, and the water affects us. There is something about water that strongly attracts humans. It is difficult to describe this feeling, and it affects everyone individually. Some are soothed by sitting by the water's edge. Attending an arts festival by a river makes you feel relaxed. Watching boat races builds excitement. Whatever that feeling is, water links rural, suburban, urban, cultural and socioeconomic areas. Water brings everyone–and everything–together.

Pennsylvania is rich in water. Considering the total amount of water, Pennsylvania is second in the nation only to Alaska. The U.S. Army Corps of Engineers manages 17 lakes; the Bureau of Forestry has seven lakes; 53 state parks (out of 116) have launch ramps and access to water; the Fish & Boat Commission owns 49 lakes and over 300 public accesses. Annually, some 2.5 million Pennsylvanians in more than 350,000 registered boats and an estimated one million anglers take to the water. With these numbers increasing, one can see how the water resources are pressured.

Every Pennsylvanian lives in one of six major watersheds–Lake Erie, Genesee River, Susquehanna River, Ohio River, Potomac River and Delaware River. There are more than 83,000 miles of rivers and streams; 76 natural lakes give us 5,200 acres of flat water; more than 200 man-made impoundments create an additional 200,000 acres; Lake Erie gives us more than 750 square miles of big water. The Delaware River, the last free-flowing river in the Northeast, has 56 miles of tidal waters with access to Delaware Bay.

Out the back door

What are we doing so that people can get to their favorite spots without having to pay a fee? In the fall of 1997, the Fish & Boat Commission launched a new initiative to develop a statewide network of scenic water trails. The network of trails provides enhanced recreational opportunities for the Commonwealth's anglers and boaters while returning significant benefits to the state's economy in travel and tourism dollars. By developing a network of water trails, the Commission will increase this economic effect while meeting the growing demand for enhanced boating and outdoor experiences. Most importantly, water trails provide an opportunity for free access and allow participants to connect with the Commonwealth's natural resources.

Boating is an increasingly popular form of outdoor recreation in Pennsylvania. The number of boats registered in the state has grown 312 percent in the last decade alone. Annually, 2.5 million Pennsylvanians take to the water in boats, with nearly 15 percent of all households owning at least one watercraft. This activity contributes more than $1.7 billion each year to the Commonwealth's economy.

Promoting the Commonwealth's waterways as water trails is a new approach for the Commission. Traditionally, the Commission provides general recreation information on all of the Commonwealth's 83,000 miles of flowing waterways and nearly one million acres of lakes and wetlands. Under the new water trail initiative, the Commission will provide specific information about designated water trails, similar to marked foot trails. Included will be directions to trail heads (boat launch and take-out points) and background about the scenic, historic and geological points of interest along the way.

Since the fall of 1997, the Commission has worked with the Alliance for the Chesapeake Bay to develop the Commonwealth's first official water trail, the Susquehanna River Trail, running 24 miles from Halifax to Harrisburg. The Commission has also developed a water trail program model for use with subsequent trail partners.

Another program the Commission has initiated is Adopt-an-Access. Beginning in 1996, those interested in keeping Pennsylvania beautiful were, and are still, able to team with the agency to become caretakers along one of the state's streams, rivers or lakes.

The Commission owns or operates over 300 sites that provide free access to the water for public fishing and boating. Through Adopt-an-Access, interested individuals or groups can help with routine maintenance and litter removal at these sites. Providing clean, well-groomed areas for anglers, boaters and the millions of tourists who visit, the program also serves to raise the awareness of participants about litter problems. The program allows groups or individuals to become special "caretakers" of portions of Commission access areas. Cleanup work obviously helps preserve the sites for public use. However, more importantly, it protects opportunities for recreation on the water.

Outdoor sports enthusiasts have a long history of working to keep the environment clean and, more importantly, free. They know that such efforts in the long run will pay dividends for both the natural resources and for us.

For more information

Fee Demonstration Program. www.canoekayak.com/issues/March2000
Fee Demonstration Program. www.fs.fed.us/recreation/fee_demo
Adopt-an Access. For an application from the Commission, call 814-359-5152
Alliance for the Chesapeake Bay. 717-236-8825 or 1-800-662-CRIS
Center for Watershed Protection. 301-589-1890
DEP. www.dep.state.pa.us
PFBC. www.fish.state.pa.us
Commission Bureau of Boating & Education. 717-705-7833

Summertime on French Creek's Upper Reaches

by Kevin Phillips

As Matt Burke and I prepared to fish the West Branch of French Creek for the first time, a truck pulled up to us on the dirt road, and a local resident asked us where we were from. After hearing we were from Pittsburgh, and that we had never fished the West Branch before, he began trying to convince us to change our plans.

He told us that all we would catch in the creek were "a bunch of pike and maybe an occasional musky," and then we were given directions to a nearby farm pond to fish as an alternative. Because we were out-of-town fishermen, we appreciated his sincere interest in us. But after our conversation, our hopes were higher than ever. We had made the trip for the pike.

Fifteen minutes later, we were wading a slow, narrow stretch of stream that averaged three to four feet deep from bank to bank. The usual feeling of eagerness I get when anticipating a big fish was heightened by the unfamiliar but promising-looking new water I was in.

My buzzbait zipped away from the overhanging brush where I had cast, and the slow, still water exploded. It was a total miss, but within seconds the water exploded again as I kept up a steady retrieve. I would soon find that the pike was 27 $^1/_2$ inches long, good enough for my first Catch and Release Angler Award, and my love affair with the West Branch of French Creek had begun.

Smallmouths, largemouths, muskies, rock bass and perch, along with pike, are all found in the West Branch, and the Fish & Boat Commission stocks it with walleye fry every other year. This is quite a variety of desirable fish, but northerns are the only ones that can be caught regularly because they are the prominent fish of the West Branch. Just as waterways pick up labels such as smallmouth stream, trout stream, bass pond and sucker hole, the West Branch of French Creek could easily be branded a pike stream.

Nine miles south of Lake Erie, the West Branch enters Pennsylvania's Erie County from New York. The creek remains in Erie County for its entire Pennsylvania length of over 22 miles. It ends in Wattsburg where it adds to the main stem of French Creek. As the beaver dam-riddled creek slowly flows southward, it passes by brushy woods, cow pastures and cornfields. A typical stream stretch is steeply banked on both sides, two to four feet deep with a soft bottom, and rarely over 40 feet wide. Expect to find plenty of good pike cover in the form of log jams, freshly fallen trees, brushy overhangs and even some lily pad patches. Keep in mind that the creek has some shallow, narrow stretches–you would never guess you were in an excellent pike fishery. Little more than trickles, these stretches just add to the mystique of a unique fishery.

Many of the West Branch's finest stretches are barely 25 feet wide, yet northerns up to 32 inches are not rare, and bigger ones of 35 inches are possible. The real action, though, comes from the creek's abundance of 20- to 28-inch pike. If I'm wading the West Branch on a summer morning during the first four or five hours of daylight, I can count on five to 10 bites from pike in this size range. The West Branch is where an angler can enjoy plenty of excitement from pike around the legal 24-inch mark, and have a chance to experience the thrill of hooking a 30-incher in a relatively small waterway.

The best times to target pike in Pennsylvania are right after ice-out, May through mid-June, and Labor Day through November. But on the West Branch of French Creek, the time to target them is during the summer.

Many of the creek's soft-bottomed, steeply banked pike stretches can be difficult to wade even during a low summer flow. Still, wading is the best approach. Log jams and beaver dams make float trips impractical even during spring and early summer. In the fall, when high water is rarely a problem, great gatherings of leaves in slow, pikey stretches can make fishing extremely frustrating. Ironically, the very features that make the West Branch an excellent pike stream also make it difficult to fish during the northern's most vulnerable periods.

Although northern pike inhabit Pennsylvania's entire portion of the West Branch, the creek is quite small around the state line and holds few pike there. Only 1 ½ miles downstream from New York, however, good pike fishing can be found where Route 430 crosses it. This wide area is tough to wade with its soft bottom and good depth, but it's perfect for a canoe. A canoe can be launched here, but use

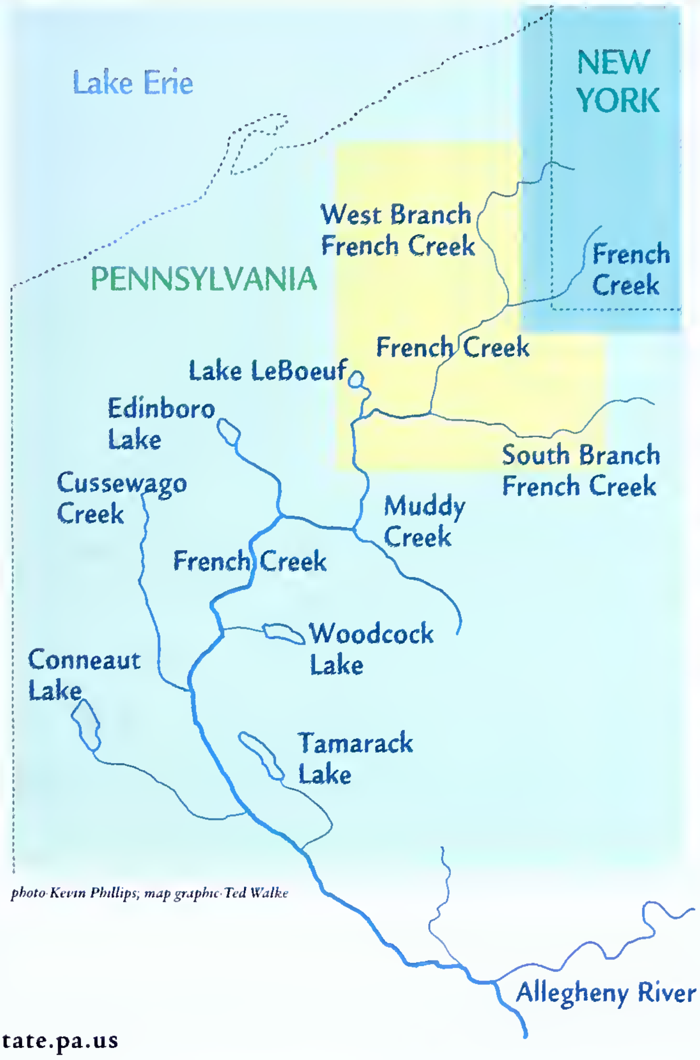
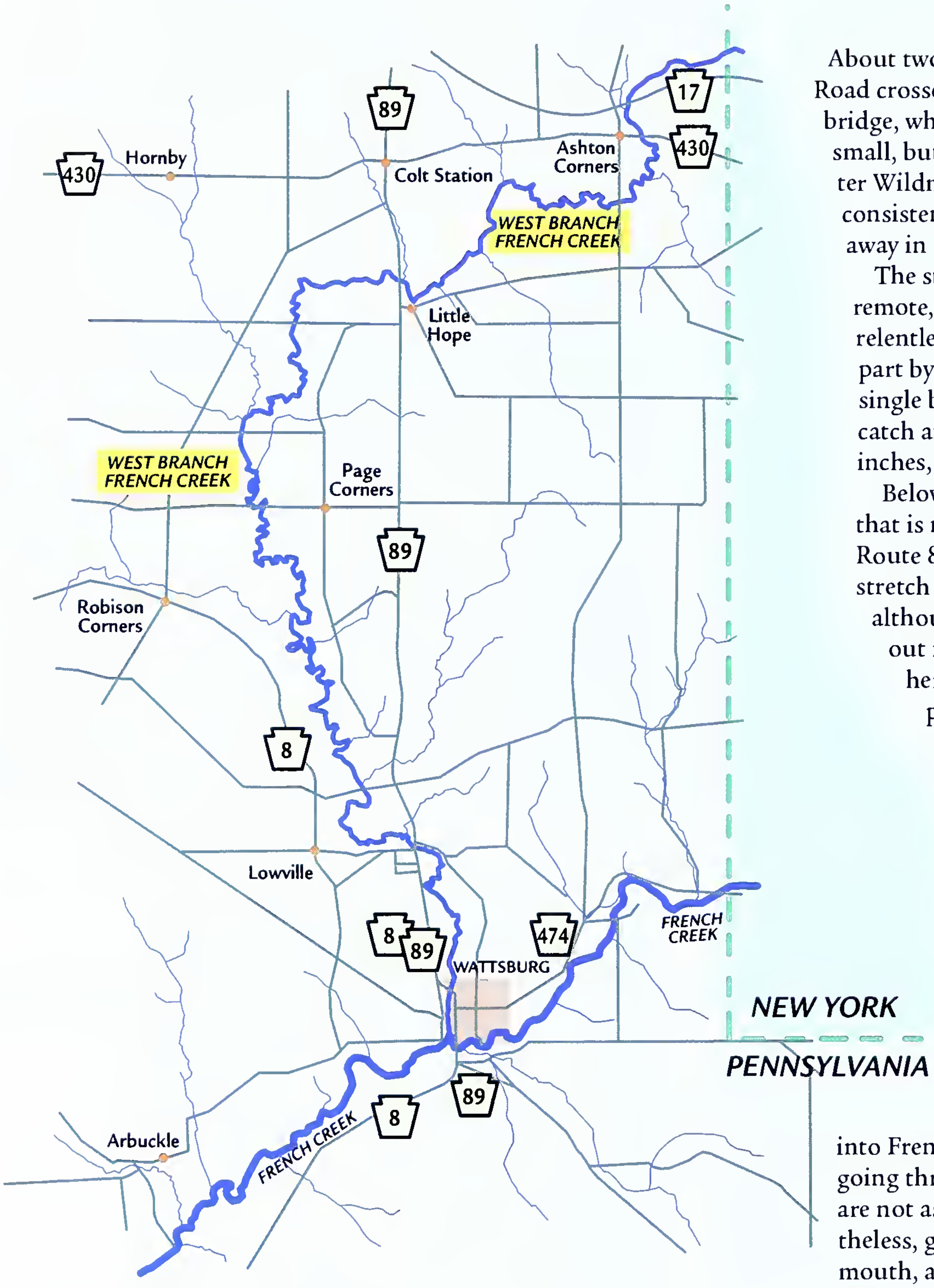


photo-Kevin Phillips; map graphic-Ted Walke

The author shows the 16 ½-inch smallmouth bass he caught on the French Creek mainstem a mile below Wattsburg.



map graphic-Ted Walke

caution carrying one down the steep bank leading to the creek from Route 430.

Between Routes 430 and 89 are five miles of slow-moving stream where northerns thrive. I've caught pike up to 28 inches in this stretch and have talked to area fishermen who modestly talk of catching 31-inch pike and muskies up to 40 inches here. This stretch's drawback is its difficulty to wade, so it is best approached during the driest summer spells.

About two miles downstream from Route 89, Wildman Road crosses the West Branch. From here to the next bridge, where Knoyle Road crosses, the creek may seem small, but it's easy to wade and holds lots of pike. After Wildman Road, good pike fishing becomes very consistent all the way to the creek's finish, 16 miles away in Wattsburg.

The stretch from Knoyle Road to Page Corners is remote, and is my favorite. This stretch is marked by relentless bank-to-bank log jams that are caused in part by an impressive winding flow pattern. From a single bend in the creek here, I watched my buddy catch and release four pike, all between 28 and 31 inches, in just 20 minutes.

Below Page Road is another remote creek section that is not touched by another public road until Route 89 crosses it again 10 stream miles away. This stretch was once crossed by Hanna Hall Road, and although not all maps show it, the bridge has been out for years. Beavers have a strong presence here, and their many dams can be thought of as pike habitat improvement projects. This is where you find the creek's deepest and widest spots, such as the long, pond-like stretch two miles upstream from Route 89. Here the creek abruptly opens up to a width of at least 100 feet, becomes lined with lily pads and is full of northerns. Hardy anglers who have a passion for fishing seldom-seen, productive waters should find this long, isolated stretch rewarding.

After the Route 89 crossing, Route 8/89 crosses the West Branch more than two miles downstream before it flows into French Creek. Skirting the village of Lowville and going through Wattsburg, the creek's final few miles are not as isolated as are the upstream waters. Nevertheless, good fishing remains steady all the way to the mouth, and the pike seem to run even bigger here. Of the nine pike I've seen landed in this stretch during the last two summers, not one has been under 25 inches.

Lures

Large spinnerbaits and inline spinners, buzzbaits ranging in size from as small as an $^1/_8$-ounce up to a $^1/_2$-ounce, floating minnow lures three to four inches long, and two- to three-inch surface plugs all produce well on the West Branch. Often drawing amazingly savage strikes, buzzbaits are the

Downstream from Wattsburg, catching 30 bass in just a few hours isn't likely, as it is above Wattsburg, but smallmouths between 15 and 18 inches are more plentiful.

most exciting of these lures to use for pike. Even though buzzbaits inspire the most outrageous strikes, spinner baits seem to be the West Branch's most reliable producer.

Many frogs, suckers and various species of minnows offer West Branch pike plenty of forage. Except for the bridge on Page Road, every crossing from Wildman Road to the mouth, which is just a short distance from where Route 8/89 crosses the main stem, has baitfish-rich riffles or shallows close by for gathering bait.

Matt Burke displays the 18-inch smallmouth bass he fooled with a buzzbait. The action took place on the mainstem one mile below Wattsburg.

French Creek main stem

With the exception of overcast days, summer pike fishing on the West Branch usually slows during the afternoon before picking up again in the evening. This is a good time to try the main stem of French Creek from the New York line to where it receives the West Branch nearly five miles downstream. This stretch of water is crossed just before the state line by Route 474, by Tanner Road 1 $^1/_2$ miles downstream, and by Route 8/89 in Wattsburg. French Creek enters Pennsylvania just 7 $^1/_2$ miles south of where the West Branch enters, but it is a very different stream. This upper stretch of French Creek is without a doubt a smallmouth stream.

These upper reaches of French Creek proper may not be as unique as the West Branch and its pike, but it's a beauty and a pleasure to fish. Averaging 40 to 50 feet wide, the creek passes cornfields, tall woods and some high clay banks as it flows toward Wattsburg. About a half-mile downstream from New York, look for an impressive clay and dirt cliff that reaches some 175 feet high. French Creek's main stem is a shallow stream, it is perfect for wet wading, and a hard, rocky bottom makes it easy to traverse. After spending the morning on the West Branch in chest waders, wading these waters is an enjoyable option on a hot afternoon.

Catching 30 smallmouths in just a few hours is likely on this stretch of French Creek.
It is a "numbers stream." Although I've caught smallmouth bass up to 15 inches here, the eight- to 12-inchers dominate the action. This abundance of bass under 12 inches is clearly not related to overfishing or to overharvesting. Instead, such a smallmouth population exists simply as a result of the creek's natural makeup and what it can support.

A modest selection of small crankbaits, floating minnows and in-line spinners can provide an afternoon of smallmouth excitement on this part of French Creek. On these typically low, clear waters of summer, casting anywhere there's at least two feet of water is worthwhile, but it's the dark, shady areas where bass lose their clear-water caution and are more vulnerable.

New kind of fishery

The upper French Creek watershed shows yet another face after the West Branch joins French Creek in Wattsburg. French Creek not only greatly increases in size with the additional flow. It also instantly becomes a new kind of fishery. Taking on a look that could be described as a combination of the West Branch and of what the main stem is like above Wattsburg, French Creek becomes more diverse with neither pike nor smallmouth the overwhelming predator. Along with this better balanced fishery comes a larger average size of smallmouth bass, and an opportunity to catch a big stream bass. Downstream from Wattsburg, catching 30 bass in just a few hours is no longer likely, but smallmouths between 15 and 18 inches are suddenly no longer a rarity.

After Wattsburg, the next access is five miles downstream where Arbuckle Road crosses high above the creek. Cornfields and thick woods surround this isolated stretch, plus over a mile of stream flows through State Game Lands 162. Many islands consisting of bleached log tangles stand out in these waters, and they are pike, smallmouth and largemouth magnets. Above Arbuckle Road the creek is impressive and a great fishery, but keep in mind that these are only its upper reaches. Famous for its diversity, and boasting over 75 species of fish, the French Creek watershed is really just getting going here–the creek itself still has over 105 more miles to go before it joins the Allegheny River.

Bridges are the key to gaining access on both the West Branch and the main stem because roads running parallel to either creek are almost nonexistent. Little public land borders these upper reaches, and I frequently remind myself how lucky I am to be fishing such fine waters.

Summer Crappie Tactics

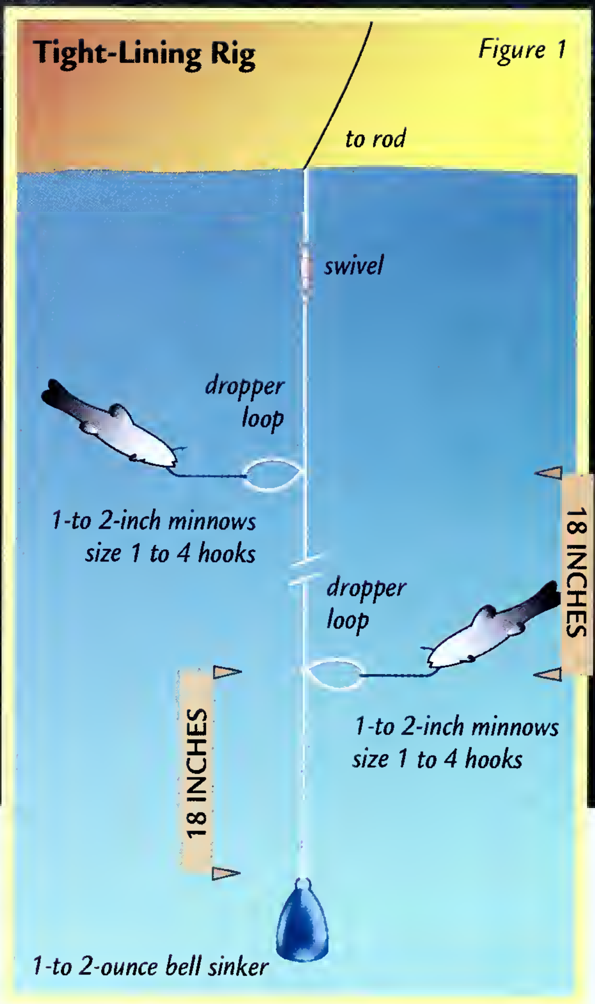
by Gerald Almy

Sculling the drab-green johnboat softly with the short paddle, I eased quietly up to the bridge piling and dropped the pair of tiny soft plastic-bodied grubs into the clear water. The jigs dropped about nine feet down and another six feet as I stripped out line.

Holding the jigs as still as I could, I let them hover next to the concrete abutment. I knew that even though I was not actively manipulating them, the jigs were quivering and fluttering slightly from natural hand movement. And that was enough. Within a minute, a sharp take telegraphed up the sensitive rod. I raised my arm quickly and felt the solid weight of a heavy crappie throbbing in resistance.

It may come as a surprise to some, but I didn't catch that fish in the spring, when the lion's share of fishing effort for this delectable panfish takes place. I caught it in the middle of summer. It was July and the temperature was in the 90s, but the fish were biting consistently. What's more, they were concentrated in a tight school, and once you found the silver, black and white panfish, catching them just required a bit of concentrated effort and patience.

Once you learn to pattern the fish and understand their seasonal movements as water temperatures rise in summer, crappies can be easy to pinpoint, and they bite even more reliably than in spring.



photos-Gerald Almy; graphics-Ted Walke

Most people associate crappie fishing with searching for spring's spawning fish in coves and bays, probing three to six feet of water near fallen trees, brushpiles and docks. Casting minnows or jigs to these mating fish can offer great sport, it's true. But crappies don't stop biting in summer just because they vacate the shallows, and there's no need to abandon this fish until the following spring.

The fact is, even though spring fishing is exciting, in many ways summer's sport can actually be even more consistent and productive. Once you learn to pattern the fish and understand their seasonal movements as water temperatures rise in summer, crappies can be easier to pinpoint, and they bite even more reliably than in spring.

There are several reasons for this. For one, the fish tend to bunch up in tighter schools than they do in spring. So once you find them you can often stay in that location and catch quite a few. Spawning is over, so there's nothing to distract them from their main activity at this time: Eating. Their metabolism is running high and food is abundant (both insects and minnows).

In addition, weather patterns are more stable. In spring, it's not uncommon for fishing to be red hot for a few days, then slim pickings for the next two or three days after a cold front blows through. The fish might be shallow and tight to bushes one day, then back 30 feet hovering over a deep dropoff the next. With summer's stable weather, crappies

photo-Gerald Almy

Summer Crappie Tactics

tend to stay in the same locations longer and feed consistently from one day to the next.

The result can be some extraordinary fishing. It's not always so easy, but at times friends and I have caught over 100 crappies on July and August outings, releasing all but a few kept for the frying pan. Catches of several dozen a day are routine.

Seasonal patterns

To fool summer crappies consistently, the most important point to keep in mind is their seasonal movement patterns. In spring, fish swarm out of deep-water winter haunts into the shallows where food is abundant and spawning takes place. By late May or June, spawning is complete and the shallows become too warm, pushing the fish back into the depths. This usually means anywhere from 10 to 30 feet deep, though the fish may suspend at these levels over much deeper water.

Instead of being in coves and bays, you'll find them at the mouths of feeders, along major creek channel dropoffs, at the edges of deep weedbeds, near the main river channel edge, over deep standing timber and brushpiles, and near artificial reefs, old flooded road beds, stump fields, submerged islands and bridge pilings.

To locate these areas, pinpoint them on the water using a depth finder. Keep a buoy handy to mark spots with good structure or locations where you catch a fish. Summer crappies often school tightly, and hooking one means there's a good opportunity to take more in the immediate vicinity. Top places to look are the areas with deep water and good structure near where you caught fish in spring in the shallows.

Once you find either natural or man-made structure in deep water, you can anchor and fish it. Often, though, it's more productive simply to use a paddle or electric motor to move slowly around until you pinpoint the fish.

Tactics

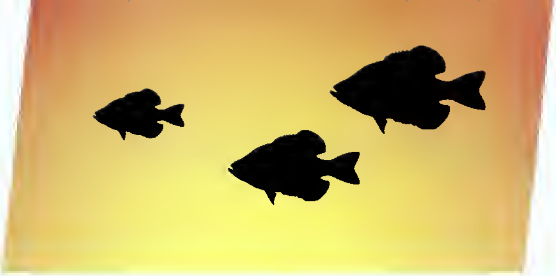
Many tactics will score on summer crappies in Pennsylvania. One of the most consistent of all is using a "tight-lining" rig. Instead of the bobber, splitshot and minnow setup used commonly in spring, this rig consists of a one- or two-ounce dipsey or bell sinker on the bottom, two size 1 to 4 long-shank gold hooks 18 and 36 inches above, tied off with dropper loops or using three-way swivels and six- to eight-inch leaders. Impale one- to two-inch minnows on each hook through the back or lips (see Figure 1).

You can fish this rig with a spinning outfit if the rod is at least $6\,^{1}/_{2}$ feet long, but many prefer to use a fly rod and reel spooled with six- to 10-pound monofilament, or even one of the special 10- to 14-foot telescoping "cane poles" sold by major mail order tackle companies.

Locate the types of water described earlier and lower the rig to the level where fish show on the depthfinder, suspended, or all the way to the bottom, near brush. If you're fishing a bridge piling you can either start at the bottom and work upward or lower the bait about 10 feet down and slowly probe deeper from there. This rig is great for slowly easing along with the wind or an electric motor, because the sinker lets you feel the bottom and detect any brushpiles or other structure. With the minnows positioned above the weight, bites are easy to detect. But don't expect strikes to be as strong or forceful as in spring. Just a slight peck or extra weight is all you're likely to feel.

Another excellent rig for summer crappies consists of two jigs rigged about 18 to 24 inches apart (see Figure 2). You can use traditional models with chenille bodies and marabou or tinsel tails, or leadheads with soft-plastic bodies. Jigs with two contrasting colors are often good, such as green and black, and red and yellow. Chartreuse is also an excellent color. Weights can range from $^{1}/_{32}$-ounce to $^{1}/_{8}$-ounce. You can tie the second jig on a dropper above the first one, or attach a leader to the eye of the first jig behind the knot and then tie the second lure to that.

Casting and retrieving this rig can occasionally produce if fish are holding in water just 10 to 15 feet deep or so near the edge of a weedbed or other cover. Usually, though, vertical jigging pays off better in summer. You can use a long spinning rod or fly rod for this fishing, with the reel spooled



with six- to 10-pound mono or slightly heavier braided line.

Ease up quietly to the area you think is holding fish, such as a bridge piling or brushpile in deep water or river channel edge. Then drop the offering straight down to the level where fish show on the depth finder, or just above the cover. When fishing pilings, strikes will often come only if the lure is within inches of the concrete. That's why vertically dropping the lure down next to it works so well.

You can swim or jiggle the bait if you like, but simply holding it steady for as long as you can is the best presentation. The slight quivering of your hand and boat motion from wind and waves add a subtle, realistic movement to the lure, sort of like a baitfish gently rolling its pectoral fins. If no strike comes in a few minutes, gently move the bait to the other side of the cover or raise it slightly in the water column, in case fish are holding shallower than you think.

Trolling

Trolling can also pay off for summer crappies. Trolling is a great way to locate fish. Use either a pair of jigs, a small silver spoon or the tight-line double-minnow rig. Setting out two rigs can be a good idea, to find out what the fish want and pinpoint their location faster. Ease slowly along the edge of submerged timber, bridge pilings, deep weed beds, river channel bends and similar areas. Add a splitshot or twist-on lead if you need to keep the jigs or spoon down deep in the summer strike zone.

When a fish strikes, throw out a marker buoy. Then troll or drift through the area again. You can anchor and cast to the spot that produced the fish, but sometimes trolling back and forth through the area draws more strikes. Adding a tiny strip of pork rind to the jigs or a small minnow can sometimes increase hookups. If there's a moderate wind blowing, you can simply drift with it and get the same lure motion you would by slowly trolling.

Night fishing is another way to catch summer crappies in Pennsylvania. Hang several lanterns over the side of the boat, or place foam-mounted floating lights out that run on 12-volt batteries. Occasionally a lighted pier or dock will jut out far enough into deep water so that you can fish from the pier and catch crappies in summer. The illumination attracts insects and baitfish, which in turn draw in crappies. You can drift minnows beneath corks in this situation because the fish often move up shallower under the cover of darkness to feed on the minnows and insects attracted by the light. Jigs can also be cast and retrieved or fished beneath a float with a slow retrieve and occasional twitch. Vertical jigging small slab spoons in the quarter-ounce to half-ounce size can also score on crappies drawn in by the light.

The fish often move up shallower in the water column as the night progresses and the water reaches its coolest point. They feed on insects and minnows near or at the surface right at the crack of dawn. Streamers like the Clouser Minnow or Zonker can produce surprisingly strong strikes at this time, as do small spinners on an ultralight spinning outfit spooled with four- to six-pound line.

With this mix of tactics, you should be well-equipped to catch crappies this summer. You may just find that the stability of the weather patterns and the predictability of the fish actually make the hot-weather season the best time of all to catch these delectable panfish. And you definitely won't have to contend with as much competition as you do fishing shallow brushpiles and docks in spring. ⬡

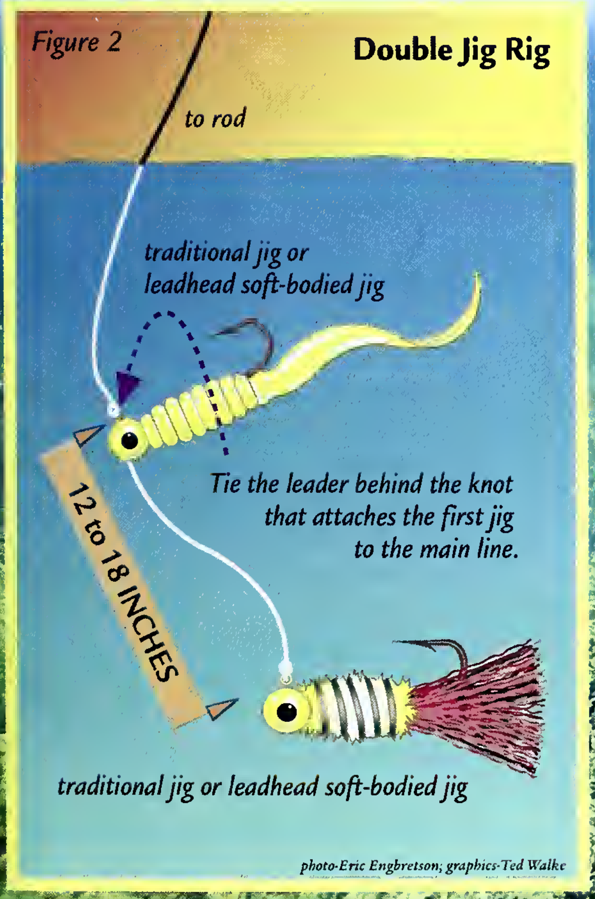
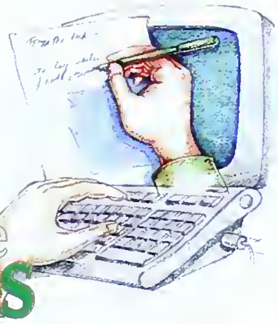


Figure 2
Double Jig Rig
to rod
traditional jig or leadhead soft-bodied jig
Tie the leader behind the knot that attaches the first jig to the main line.
12 to 18 INCHES
traditional jig or leadhead soft-bodied jig

photo-Eric Engbretson; graphics-Ted Walke



Notes from the Streams

Off duty?

One thing I have discovered since becoming a WCO is that it's difficult to enjoy yourself when spending some private time fishing along a Commonwealth waterway, especially one in your own patrol district. For example, I was asked by a state trooper friend of mine to go trout fishing on the Yellow Breeches Creek one late May morning. Because it was the end of my busy trout stocking season, it was the first opportunity I had to enjoy the resource we work so hard to protect. We decided to pick an area that would have less pressure.

When we arrived at our spot, we were disappointed to see several fishermen already working the stream. Because we had driven so far, we decided that we could tolerate the company of a few other anglers and would try our luck at this spot anyway. As we entered the stream, I noticed that the angler fishing below me kept looking up toward me as if he were going to say something. Slowly he worked his way closer to me and hollered, "Aren't you the fish warden?" With every angler on the stream now looking at me, I asked him why he wanted to know. He said that a fisherman had already caught his limit of trout and took them home, returned, and was fishing again upstream.

As I was getting a description of the suspect, I explained to the informant that although I was not on duty and was trying to enjoy some fishing myself, I would check the angler when he returned to his vehicle, which was parked nearby. A few minutes later the suspect angler returned to his vehicle carrying three trout. As I approached him and asked how he did (as one angler would ask another), he immediately said, "I know who you are and I did not already catch my limit as that guy told you" (pointing to the informant standing in the water). The informant then rushed out of the water toward the suspect and began yelling at him about seeing him already take a limit home and that he should not be pointing his finger at him. The suspect began yelling back, and quickly they were nose to nose. Concerned about a physical confrontation, I had to separate the two and warned that they not do anything that would make the situation worse for both of them. I anticipating the arrival and help of my fellow officer who was still fishing 100 yards downstream and was unaware that anything was going on. After a few minutes of negotiating, I was able to calm the two anglers and determined that the suspect probably did not catch more than the limit of fish.

My hopes for a relaxing day of fishing had been cut short because of this incident. I might as well have gone to work!–*WCO Craig A. Garman, Cumberland County.*

Stocking made easy

Every spring an amazing thing happens here in Wyoming County and across the state. Millions of trout are stocked, and it would never happen if it were not for the generous landowners who allow us to put fish on their properties and who allow the public to fish these waters. Thank you so much! The second part of the stocking equation is the helpers. The Fish & Boat Commission could not even begin to stock all these fish if we were not helped by the dedicated sportsmen who carry buckets and nets of fish. In Wyoming County, I thank Ray Goeringer, Joe Connors, John and Leslie Rhodes, Rich White and Terry Huff.–*WCO Larry L. Bundy, Jr., Wyoming/Eastern Sullivan Counties.*

"I'll never fish again!"

Deputy Bob McFadden came across a gentleman fishing in the Allegheny River who discarded a beverage container along the bank. When confronted by DWCO McFadden for the littering violation, the man cursed, stomped and hollered, and threw his fishing pole down the riverbank, vowing never to fish again if he were cited. DWCO McFadden retrieved the rod for the man, and told him he was, indeed, going to be ticketed. The man swore he did not want the fishing rod back, and advised that it should be given to a child because he would no longer be fishing.

He should have taken his own advise, because about a month or so later, DWCO Greg Pochron apprehended the same individual for possessing a short smallmouth bass, which he filleted on the spot and tried to conceal.–*WCO Thomas Tarkowski, Venango County.*

Another legal requirement?

While instructing a group in boating safety at the Berks County Youth Field Day with DWCO Carl Warner, I went through a detailed list of equipment required on watercraft to be safe and legal. I demonstrated each item of equipment, and especially stressed the need for life jackets, their use and proper fit. Deputy Warner expertly followed with a course on water safety, self-rescue and how to use a throw bag. Quite proud of ourselves for a job well done, I asked the group, "What is the most important thing you can have on your boat?" A youngster looked me straight in the eye and replied, "Food!"–*WCO John Sabaitis, Berks County.*

Just one more cast!

Who says you can't work and have fun at the same time! Last summer I spent a weekend with a bunch of Brownies and Girl Scouts at Camp Louise. On Saturday, we reviewed some basic water and boating safety topics, modeled a variety of personal flotation devices, practiced the H.E.L.P. and huddle positions and discussed "Reach, Throw, Row and Go." But by far, the highlight of the weekend was the Sunday fishing clinic. The girls were catching bluegills right and left with an occasional yellow perch. We didn't have real fancy equipment, but the girls and the fish didn't seem to notice. The only complaint was that we had to quit too soon. The girls learned how to prolong the fun just a little while longer. "Please, just let me have one more cast!"–*WCO Sally A. Corl, Carbon County.*

Brush up on the ID skills

I was on routine patrol during trout season in May on Roaring Creek, which forms the border between Columbia and Montour counties. I encountered two individuals fishing near the confluence of Roaring Creek and the Susquehanna River. I was surprised to find anyone in that area because Roaring Creek has not been stocked that far downstream in some time. I approached the individuals and could see that they had fish in their creels. They each had four fish, two smallmouth bass and two rock bass. They readily admitted that they were fishing for bass, and believing all of the fish to be smallmouths, they were apprehensive because two of the fish that they each had were each less than 12 inches. They breathed a sigh of relief when I informed them that the smaller fish were legal.

The relief was short-lived, however, when I asked them to tell me the season for smallmouth bass. Apparently these fishermen not only did not know what they had caught, but they had neglected to read the summary book issued to them with their fishing licenses. I cited the gentlemen for taking bass out of season and advised them to read the summary book and brush up on their fish identification skills before their next outing.–*WCO Mark Pisko, Columbia, Montour, Northumberland and Sullivan Counties.*

Power of partnerships

I wanted to relive one of the more pleasant aspects of the job, one that I had experienced several times during a previous assignment in another district–a children's fishing derby. Nothing can be more gratifying than to see the expressions of delight on the faces of kids having a good time taking part in these events.

A kid's derby is a great concept, I thought, but where do I start to look for answers to the who, what, where, when and how? The answer seemed insurmountable, especially if the event were to occur before the boating season.

Much to my astonishment, three short meetings and a few phone calls later, the flyers were mailed and things were rolling. Between the efforts of the Lebanon Parks and Recreation Department, the Indiantown Gap Fish and Game Conservation Club cooperative nursery and the Doc Fritchey Chapter of Trout Unlimited, all there was left to do was wait for the day to arrive.

The partnership engine has amazing power. All it takes is a little priming.–*WCO Terry Deibler, Lebanon/ Southern Dauphin Counties.*

Herpetology lesson

In early June I participated in an aquatic insect identification workshop with the Habitat Management staff at the Commission's Field Station 22, along Penn's Creek. Expecting to have a course in entomology, it didn't take long to see that a lesson in herpetology would be waiting around every corner.

As we moved along the stream, the bank came alive with several watersnakes. A garter snake raced ahead of us on the grassy trail to the place where we would collect aquatic insects from the stream. A large, unusually placid watersnake basked on the broken-down steps near our outdoor "classroom." To top off our sightings for the day, a large, brilliantly colored yellow-phase timber rattlesnake surprised us as we hiked in the woods along the stream. My seasonal employee said it all: "This place is pretty snakey!"

Knowing that not everyone in our group was entirely comfortable with the slithery serpents, we caught each other carefully inspecting the trail ahead of us with each step. Then a dreaded high school math problem popped into mind: If five Habitat Management seasonal employees head into the woods where 12 watersnakes, one garter snake and one large timber rattlesnake live, how many employees will return?

Well, we all returned from our expedition into the woods, although some of us may have liked to return a little faster than others!–*Laurel Garlicki, Aquatic Resources Program Specialist, Northcentral Region.*

"Ohio radius"

Working a "border district" gives an officer his own set of somewhat amusing stories. Each WCO many times has to use discretion on just how far over the state line a non-resident can fish before changing the violation from a warning to a citation.

Recently I came across four non-residents fishing for steelhead at Crooked Creek. When approaching the first one and requesting to see his license, he responded that he was only 15 and did not require one. I agreed that he did not and engaged him in conversation, remarking how sharp the red sports car parked near the bridge was. He proudly said it was his and how the 4-speed really made it "move." When asked his date of birth, the year 1981 was given. A few more rapid-fire questions had the year go to 1982, then 1983, to a confession of being 18 years old.

Rounding up the other three anglers had another round of excuses, including the one in which they knew there was a "radius" that they could be over the state line and still fish legally with their Ohio licenses. I agreed that such a radius existed, and asked them to produce their Ohio licenses before we measured. Only one fisherman had a license and he was disgruntled to find that the radius reached into Pennsylvania only a matter of inches, not a distance of more than five miles.–*WCO John W. Bowser, Western Erie County.*

Bednarchik Named 1999 "Officer of the Year"

Raymond A. Bednarchik Jr. was named the PA Fish & Boat Commission 1999 "Officer of the Year," an award sponsored by the Northeast Conservation Law Enforcement Chiefs Association. The award was presented last April at the Northeast Fish & Wildlife Conference, in Charleston, West Virginia.

The presentation included (photo, l to r) Commission Executive Director Peter A. Colangelo, Bureau of Law Enforcement Director Thomas J. Kamerzel, WCO Raymond A. Bednarchik Jr., retired WCO Raymond A. Bednarchik Sr., retired Bureau of Law Enforcement Director Edward Manhart, and Southeast Region Manager Jeffrey S. Bridi.

Bednarchik was nominated for the award by Jeffrey Bridi, Commission Southeast Region Manager. "I have known WCO Bednarchik since he and I were hired in 1988," Bridi said. "He has at all times conducted himself in a manner that brings credit to him, the Bureau of Law Enforcement and the agency. He conducts himself as a true professional when dealing with the public, whether issuing a citation or responding to a request for information.

"WCO Ray Bednarchik is an extremely knowledgeable officer who readily shares his experience and insights with fellow officers," Bridi said. "His handling of a fatal boating accident on the Schuylkill River was an outstanding example of his thorough approach to a complex problem. The investigation lasted from the date of the accident in September 1998 until the spring of 1999. He used the services of many other agencies to assist in this high-profile, complicated case."

Circumstances surrounding Bednarchik's receiving the 1999 WCO of the Year award were unique. It was the first instance since the awards were initiated in 1974 that both a father and a son were honored as Officer of the Year. Ray Bednarchik Sr. received the Officer of the Year award in 1977, and in 1999 Ray Jr. received it in a presentation by his father. Coincidentally, both ceremonies were in West Virginia.

Fishin' from the Kitchen

Mozzarella-Topped Crappies

by Wayne Phillips

This is the perfect way to prepare fish for children who think they do not like fish. The gooey mozzarella and tomato sauce are reminiscent of pizza flavors that kids love so much.

Ingredients for four servings:

☐ 8 boned crappie fillets
☐ 1 cup thick tomato sauce, homemade or purchased
☐ 2 cups grated mozzarella cheese
☐ Salt and pepper
☐ 1 Tbsp. olive oil

Procedure

Oil the bottom of a baking dish with olive oil. Season the crappie fillets with salt and pepper. Lightly spread the top of the fillets with thickened tomato sauce and cover with a generous topping of grated mozzarella. Bake in a 350-degree oven until the fish is done and the cheese has melted.

Serve

Serve over fusilli, penne or rigatoni pasta that has been lightly tossed with tomato sauce. Do not over-dress the pasta or the delicate flavor of the fish will be lost. To lighten the tomato flavor, thin the tomato sauce with some half and half. Focaccia, an Italian flatbread widely available, makes an ideal base for this dish. Warm the bread and place the baked fish on top. Another option is to serve the fish with vegetables and mashed potatoes or rice.

photo-Wayne Phillips

Hints

The fish can be broiled instead of baked. Broiling results in a golden crust on the cheese, which makes for a more colorful finished dish. Thickening the tomato sauce by simmering it uncovered improves the finished dish. It allows you to get a wonderful tomato flavor by using just a light coating of sauce, and it tends to stay on the fish better while it is cooking.

Which kind of cheese

Cheese is not often served with fish, but by balancing the fish flavor to the cheese it is terrific. Use milder cheeses for delicate-flavored fish and stronger cheese with more aggressively flavored fish. Use good melting cheeses like Mozzarella, Swiss, Monterey Jack or Fontina if you want to coat the fish fully. Hard cheeses like Parmesan or Pecorino Romano just need a dusting of cheese to complement the fish. Try unusual cheeses like a smoked Gouda to add some smokiness.

Regular Contributors Recognized

Two *PA&B* contributors recently won awards for articles that appeared in *PA&B*. Linda Steiner won the 1999 Pennsylvania Outdoor Writers Association (POWA) "Trout and the Coldwater Fishery Award" for the article "Trout: More Than Just a Fish," which appeared in the May/June 1999 issue. The award was co-sponsored by POWA and Pennsylvania Trout, the state council of Trout Unlimited.

Terry Brady took third place in the boating subject/magazine category of the 1999 Outdoor Writers Association of America awards program. His winning entry was "Collecting Mahogany Masterpieces," which appeared in the March/April 1999 issue. The award was sponsored by the Recreational Boating and Fishing Foundation.

The mission of the Pennsylvania Fish & Boat Commission is to provide fishing and boating opportunities through the protection and management of aquatic resources.

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PFBC World Wide Web Site:

Angler's Notebook *by Jon Farley*

Rubber worms rigged to be "weedless" are among the most potent bass-catchers. One problem with them, though, is that they sometimes slide down the hook shank after a few casts. You can alleviate this by tying two extra pieces of stiff monofilament to the hook eye, one on each side of the regular line knot. Then trim the excess line, leaving short tag ends. By acting as makeshift barbs hidden inside the worm, these knots keep the worm from sliding back once it is pushed up over the eye.

In addition to great angling opportunities, fishing licenses afford Pennsylvanians another exciting activity–snapping turtle trapping. Though they can be found in just about every lake and sizable stream in the Commonwealth, few people actively pursue snappers. For a change of pace, try trapping "loggerheads" this summer to make a batch of tasty turtle soup. For regulations concerning snapping turtles, see the 2000 *Summary of Fishing Regulations and Laws.*

Trailer light hookups can get clogged with corrosion during the long periods they are not in use. As a result, the plugs can be difficult to connect, and may not allow the flow of electricity between the contact points. To keep your terminals free or corrosion, buy an extra set of plugs, cut off the wires and attach them to their counterparts on your trailer and vehicle when they're not joined. Cover the exposed wires with electrical tape.

Although the various sunfish species are generally not difficult to catch, on some days they can be unwilling to bite. Here's one way to entice more strikes from reluctant sunnies. Tie a 12- to 18-inch piece of line onto the hook of a tiny spinnerbait or in-line spinner. Then to this line attach a hook baited with a redworm or grub. Fish that come from afar simply to investigate the lure will oftentimes succumb to the trailing live bait.

Great trout fishing is usually not associated with midsummer. However, fly fishermen can get into some great early morning dry fly action on the state's small, wild brook trout streams. Very early in the day, brookies will readily take big, highly visible imitations drifted through the riffles and runs of swift freestone streams.

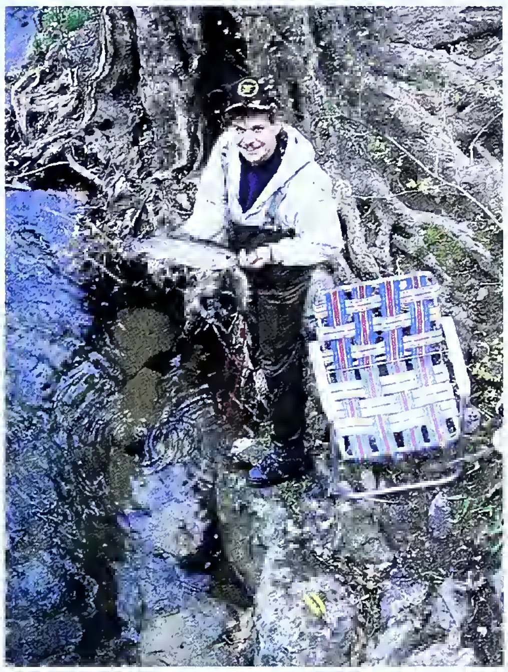
photo-Art Michaels

Photo Contest Tips

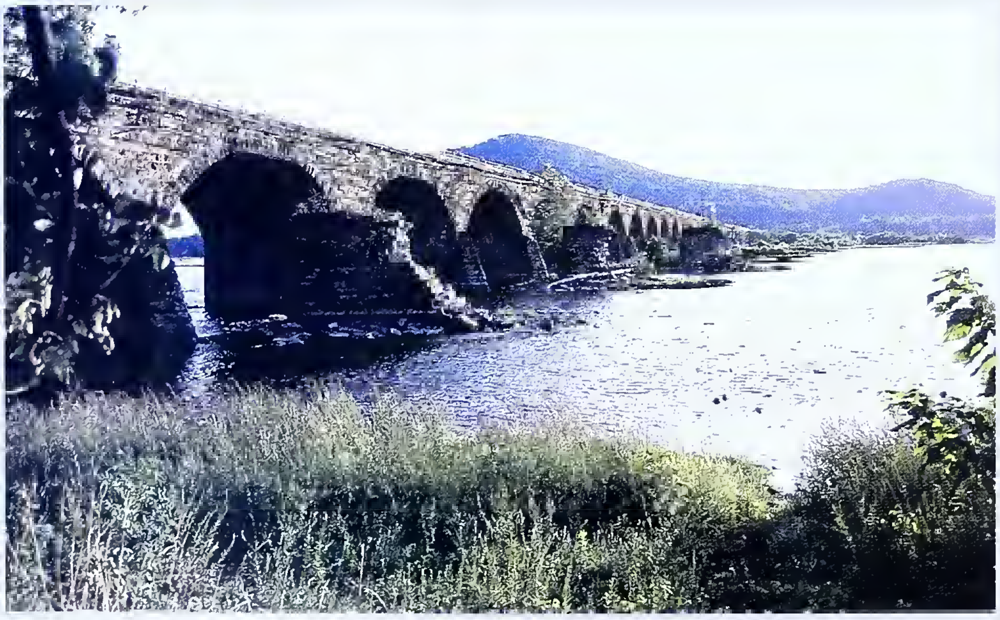
by Art Michaels

Check the details of the Commission's Photography Contest on page 63! Use these ideas to take some great fishing, boating and waterway photos this season! For more ideas, see the photo tips in the last issue, and check out upcoming issues for more photo tips!

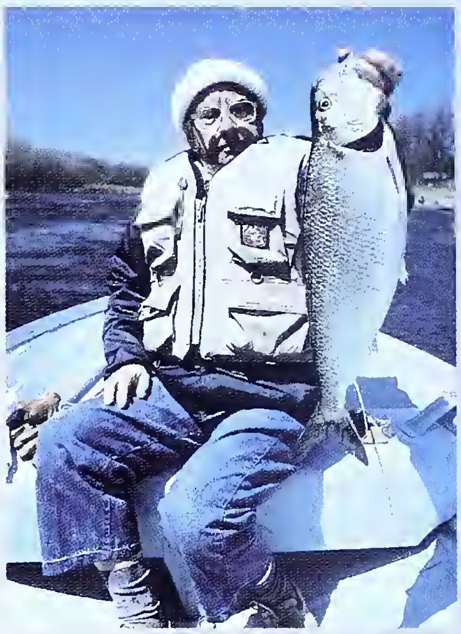
FOCUS ON A CRITTER'S EYES. Critter closeups can be dramatic, but depth of field can be a problem. To minimize the effect of a narrow area of sharpness, focus on the animal's eyes. **Exposure:** Provia 100, about $^{1}/_{125}$ -second at f/8.



UNUSUAL CAMERA ANGLE. A camera angle higher or lower than usual can create a picture with a different look. This photo was taken from a bridge. **Exposure:** Provia 100, about $^{1}/_{30}$-second at f/2.8.



PATTERNS. Natural or man-made patterns, ordered or random, can make interesting photographic subjects (the bridge arches in this photograph). As you explore our waterways, watch for patterns you can photograph. **Exposure:** Provia 100, about $^{1}/_{60}$-second at f/8.



USE A POLARIZING FILTER. Compare these two photographs, one taken without a polarizing filter (below), the other, with a polarizer. A polarizing filter can reduce glare and haze, darken a blue sky and increase a picture's overall color saturation. Cameras with automatic exposure settings require a circular polarizer. Manually operated cameras need a linear polarizer. **Exposure:** Kodachrome 64, about $^{1}/_{250}$-second at f/8 without polarizer and about $^{1}/_{125}$-second at f/5.6 with polarizer.

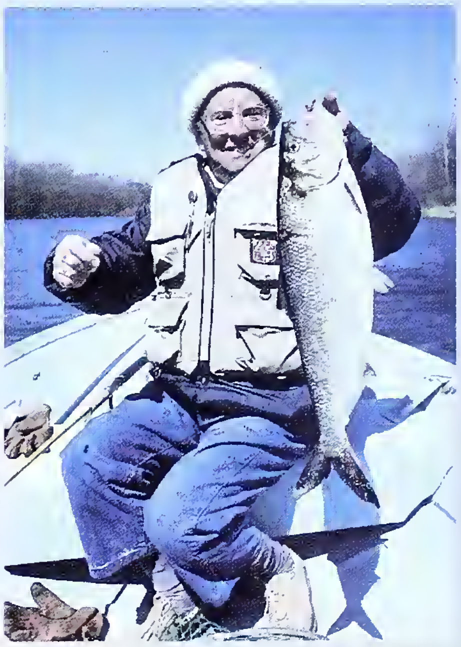


photo-Ted Walke

Year 2000 PFBC Photography Contest

PICTURE THIS! Your photograph in *Pennsylvania Angler & Boater* Magazine, in Commission publications, on the Commission's web site, and on Commission exhibits!

The Year 2000 Pennsylvania Fish & Boat Commission Photography Contest is intended to foster a greater appreciation for Pennsylvania's fishing and boating, and aquatic resources.

Contest winners will be determined by a panel of judges chosen by the PA Fish & Boat Commission. Photographs will be rated on qualities including composition, originality, visual appeal and adherence to contest rules. First-, second- and third-place winners, and honorable mention winners, may be selected in each category.

Contest winners and honorable mention winners will receive a certificate. Winners will also receive a large-size (6-inch diameter) 10th Anniversary Trout Stamp patch. Honorable Mention winners will receive a year 2000 Trout Stamp patch. Winning entries and honorable mentions may appear in a contest feature article in a future issue of *Pennsylvania Angler & Boater*. All entries may also be used elsewhere in the magazine, on the magazine's cover, in Commission publications, on the Commission's web site, and in Commission exhibits.

The contest will run from January 1, 2000, through December 1, 2000. Winners are scheduled to be announced during an awards presentation at the January 2001 Commission meeting.

Rules

- The contest is open to amateur photographers (anyone who makes less than half one's annual income from taking and/or selling photographs).
- Entries must be original works taken in Pennsylvania, and they must have been taken by the person entering the contest.
- Entries must also show adherence to Pennsylvania fishing and boating laws and regulations.
- In photographs all boaters, and anglers in boats, must be wearing properly fitted, buttoned and zipped life jackets.
- Entrants may submit only mounted 35mm color slides, color prints in sizes 3 $^1/_2$"x5", 4"x6", 5"x7", or 8"x10", or unmounted medium-format and large-format transparencies.
- All submissions must be in color–no black-and-white photos.
- All submissions must be original–no duplicate slides or electronic submissions.
- No mounted, over-matted, framed or glassed prints will be accepted.
- Retouched or electronically manipulated entries are not allowed.
- Please do not send negatives.
- Each photo must include the entrant's name, address, phone number, location of the photograph, and category, in addition to a fully completed official entry form on this page for each category entered.
- Participants are limited to a total of two entries per category. Multiple submissions are allowed, as long as entrants submit no more than two items per category.
- The Pennsylvania Fish & Boat Commission shall have the right to use all submissions for publishing, illustration, World Wide Web display, advertising, trade, exhibitry and promotion, or any other use in any medium for any purpose without compensation.

Entrants who want their materials returned must include a self-addressed, stamped envelope with the right amount of postage and appropriate packaging to safeguard materials. Submissions that do not include return envelopes and postage will not be returned.

Photo Contest Entry Form

www.fish.state.pa.us

Complete this form with each entry and mail to: PFBC Photo Contest, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000. The deadline for the Commission's receiving entries is December 1, 2000.

Entrant's Name: ______________________

Address: ______________________

City: ______________ State: ________ Zip: ________

Phone: ______________________

E-mail (if available): ______________________

Date: ______________________

Signature: ______________________

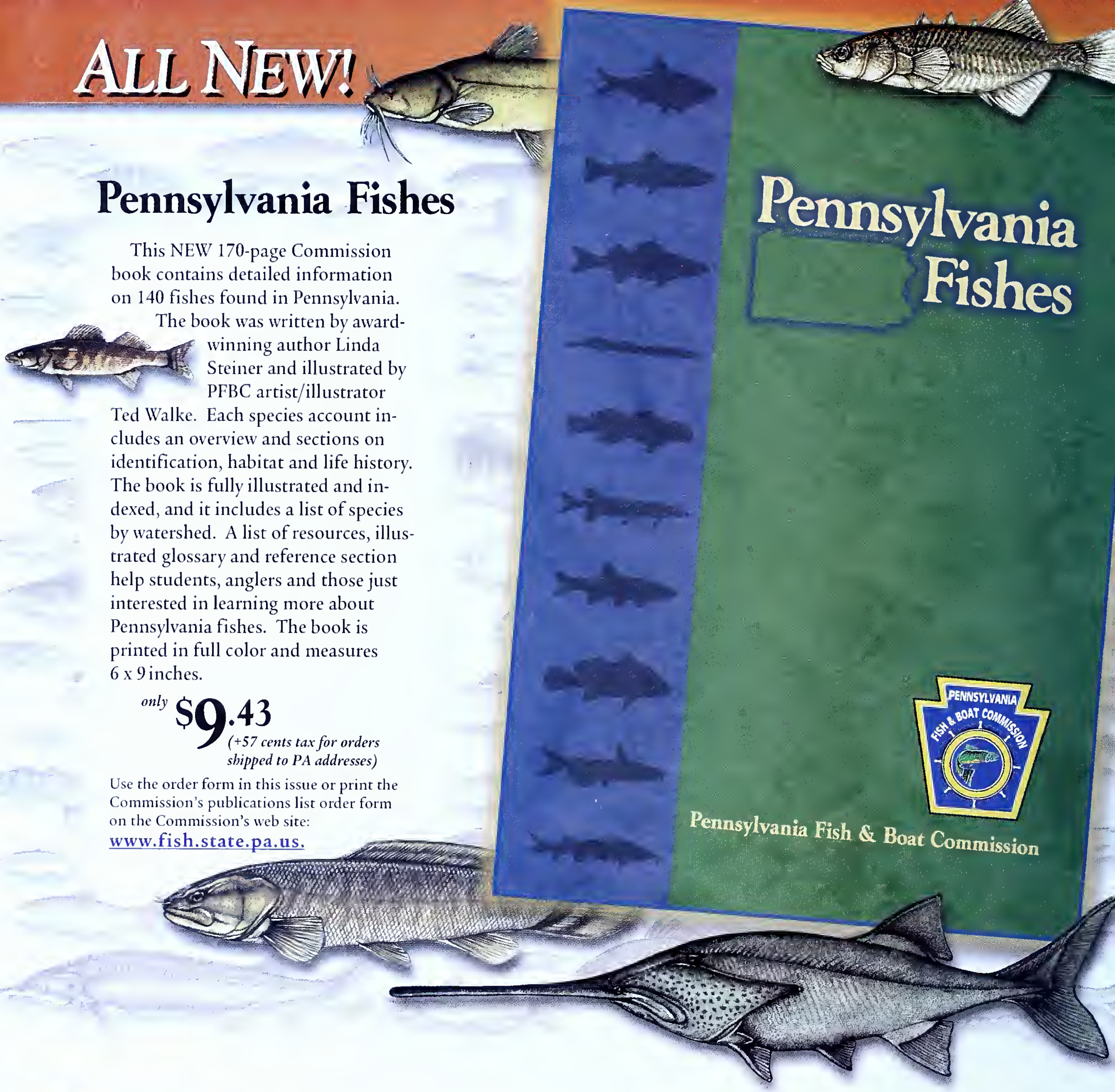
Categories

☐ 1. Seasonal Fishing and/or Boating
☐ 2. Family Fishing and/or Boating
☐ 3. Reptiles and Amphibians (Animal closeups, or photos with the animals as the primary subject)
☐ 4. Invertebrates (worms, aquatic insects, crustaceans, mussels)
☐ 5. Fishing & Boating Resources (primarily waterway scenic emphasis)

Office use only - Leave blank
Category:Entry #:

This form may be photocopied.

ALL NEW!


Pennsylvania Fishes
PENNSYLVANIA FISH & BOAT COMMISSION
Pennsylvania Fish & Boat Commission

Pennsylvania Fishes

This NEW 170-page Commission book contains detailed information on 140 fishes found in Pennsylvania. The book was written by award-winning author Linda Steiner and illustrated by PFBC artist/illustrator Ted Walke. Each species account includes an overview and sections on identification, habitat and life history. The book is fully illustrated and indexed, and it includes a list of species by watershed. A list of resources, illustrated glossary and reference section help students, anglers and those just interested in learning more about Pennsylvania fishes. The book is printed in full color and measures 6 x 9 inches.

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The Keystone State's Official Fishing and Boating Magazine

PROTECT • CONSERVE • ENHANCE

RESOURCE FIRST

Partnerships in Action

When an angler buys a fishing license and a boater registers a boat, he or she is helping to fund the programs under the jurisdiction of the Fish & Boat Commission. Unfortunately, as everyone has recognized for many years, angler and boater dollars are not enough, in and of themselves, to pay for our growing infrastructure needs and fully fund many conservation projects around the state. In recent years, conservation-minded citizens have also stepped up to help protect Pennsylvania's aquatic resources through voluntary donations to the Fish & Boat Commission. As a result of these contributions, we were recently able to award grants to 10 organizations for local aquatic resource conservation and access improvement projects.

For more than 10 years, the Commission has collected donations for the conservation and enhancement of aquatic resources and for acquisition of lands for fishing and boating access. Through the **Conservation Acquisition Partnership** and **Conserve 2000 programs**, monetary contributions are placed in special accounts from which funds may be expended only for specified purposes. Last spring, the Commission took action to establish a grant program, through which organizations and individuals could apply for and receive funding from the Fish & Boat Commission for local aquatic resource conservation and access improvement projects.

Applications were received requesting funding for a variety of activities, including habitat/access acquisition, riparian restoration, and instream habitat enhancement projects. In all, we received 40 grant applications requesting $1.7 million in project funding.

Amazingly, we were able to fund one-fourth of the projects, wholly or partly, despite having only $30,000 available for this grant program. Grants were awarded to 10 worthy organizations and projects:

- Mid-State Resource Conservation & Development Council for improving shoreline access at Faylor Lake, Snyder County.
- Paradise Sportsmen's Association for riparian protection along Eshleman Run, Lancaster County.
- Stony Creek Anglers for instream habitat restoration on Stony Creek, Montgomery County.
- Cheltenham Township for streambank restoration on Tookany Creek, Montgomery County.
- Cambria County Conservation District for streambank stabilization along Chest Creek.
- York County Parks Foundation Charitable Trust for streambank improvement on the East Branch of Codorus Creek.
- Muddy Creek Chapter of Trout Unlimited for stream restoration on Muddy Creek, York County.
- Solanco Future Farmers of America for instream habitat projects on Octoraro Creek, Lancaster County.
- Penns Valley Conservation Association for habitat improvement in Penns Creek, Centre County.
- French Creek Project for streambank stabilization on Conneauttee and Little Conneauttee creeks, Crawford County.

In spite of the limited nature of the resources available, this small amount of seed money from the Conserve 2000 Program will go a long way. Many of the applicants will be using Conserve 2000 funding to attract funding from other existing state and federal sources, like the Governor's new Growing Greener Initiative. This funding partnership is good for everyone involved, but most importantly, it's good for the resource.

The Conserve 2000 grant program is just one example of the many partnerships between the Commission and Pennsylvania's many active conservation and sportsmen's organizations. One of the areas in which the efforts of anglers and sportsmen's organizations has been particularly important is in defending the public's rights to use Pennsylvania's public waterways. In one case, these efforts took the form of litigation over the status of the Lehigh River. This case was described in the July/August 2000 issue of *Pennsylvania Angler & Boater*. The Pennsylvania Federation of Sportsmen's Clubs was the only statewide conservation group directly involved in the Lehigh River litigation. The Commission salutes the Federation's key role in this case, which is more fully described in this issue's "Currents" section, on page 61.

The Fish & Boat Commission recognizes the importance of working together for our aquatic resources. Thousands of Pennsylvanians volunteer millions of hours to help protect, conserve and enhance these resources. Others make voluntary gifts to the Commission to support our Conservation Acquisition Partnership and Conserve 2000 efforts. To all those who go the extra mile to help, the Commission says: **"Thank You."**

Peter A. Colangelo
Executive Director
Pennsylvania Fish & Boat Commission

PA Fish & Boat Commission New Administrative Headquarters Dedication and Open House

The Pennsylvania Fish & Boat Commission dedicated its new headquarters building to future generations of anglers and boaters at ceremonies in Harrisburg on July 22, 2000. More than 350 dignitaries, staff and members of the angling and boating public attended the ceremony.

The ceremony opened with an invocation offered by Michael Rothan, a seminarian studying at St. Vincent's Seminary, Latrobe. Before entering the seminary, Rothan was a teacher and worked under grants from the Game Commission.

The invocation was followed by the presentation of colors by a Fish & Boat Commission honor guard, consisting of Waterways Conservation Officers Steven Boughter, Terence Deibler, David Kaneski, Mark Pisko and James Stout.

Patrick Domico made a presentation on behalf of the Pennsylvania Sportsmen's Advisory Council and presented official greetings from Governor Tom Ridge. Mr. Domico also presented Executive Director Colangelo with a video documenting efforts to restore the upper Susquehanna River with a view toward bringing water quality up to levels to support trout stocking.

After Mr. Domico's greetings, Executive Director Colangelo dedicated the new headquarters in remarks praising the contributions of all who worked on this long-term project. Colangelo noted that the new headquarters pays tribute to our conservation heritage with displays honoring former Executive Director Ralph W. Abele and our fallen officers, even as we look toward the future with the involvement of children in cutting the ribbon.

Commission President Donald Anderson made a special presentation on behalf of all the members of the Fish & Boat Commission. Anderson presented Executive Director Colangelo with a special award recognizing his achievement in bringing the headquarters project to completion.

Dauphin County Commissioner John Payne recounted the role of partnerships in the headquarters project. The project involved local, county and state government in a partnership with the private sector to finance and construct the building. He praised the Susquehanna Township Commissioners and the Dauphin County Industrial Development Authority for their important roles in this project. On behalf of the county commissioners, Payne presented a proclamation congratulating the Fish & Boat Commission on its headquarters project.

photos-Mike Worley, Commonwealth Media Services

Deputy Executive Director and Chief Counsel Dennis Guise presided over the presentation of special recognition to the Maguire Group, which provided architectural and engineering services; Lobar Associates, which provided construction management for the project; and Environmental Interiors, which oversaw interior design and furnishings for the project. Special recognition was also provided to Tim Klinger, Brian Barner, Dennis Guise and Wasyl Polischuk of the Commission staff.

The honor guard of Waterways Conservation Officers then raised the newly designed Fish & Boat Commission flag over the new headquarters. Dedicating the headquarters to the future, the children and relatives of Commission staff next cut the ribbon for the new building. Finally, the dedication ended when the members of the Fish & Boat Commission and Executive Director Colangelo joined forces to cut a second ribbon.

The dedication was attended by many officials and representatives of Pennsylvania sportsmen. Among those in attendance were State Senator Jeffrey Piccola and State Representative Mark McNaughton, in whose districts the headquarters is located. Vern Ross, Executive Director of the Game Commission, and three members of the Game Commission attended, as did Brent Glass, Executive Director of the Historical and Museum Commission. Officials of the Departments of Conservation and Natural Resources and Environmental Protection as well as members of the Pennsylvania Sportsmen's Advisory Council were also in attendance. In addition to County Commissioner John Payne, members of the Susquehanna Township Board of Commissioners attended the ceremony.

Following the ceremony, the Commission hosted a gala open house. Nearly 500 people toured the new headquarters as part of the event.

Casting Around

THREATENED

Say the words "threatened" and "endangered."

ENDANGERED

These words have an ominous tone. They suggest irreversible loss and finality. Threatened and endangered species in Pennsylvania can become extirpated from the state.

Say the words again. These words also suggest the possibility of rebuilding. When we identify a threatened or endangered species, we can take steps to protect the species and conserve and enhance its habitat. We can also educate others on these efforts, and we can try to prevent other species from becoming threatened or endangered.

For these reasons, beginning on page 31 in this issue, we include pictures and brief descriptions of most of Pennsylvania's threatened and endangered fishes. You're not likely to see these fish in our waterways, but if you do, this information can help you identify them.

On page 27, we continue our Conserve 2000 theme with a more detailed article on Pennsylvania's threatened and endangered fishes, by Aquatic Resources Program Specialist Walt Dietz. In this article, the author explains how fish species become threatened and endangered, and how the Commission protects them.

You will also find an article on the Schuylkill River Water Trail, beginning on page 48. Schuylkill River Greenway Association Executive Director Dixie Swenson takes us through five eastern Pennsylvania counties on the water trail's 142-mile course.

This issue's front cover features photographs of two anglers with new state-record fish, a brown trout and a crappie. You'll find the details of these catches in this issue's "Currents" section.

Also on our front cover is a smallmouth bass, photographed by Doug Stamm. All summer, I've heard reports that the smallmouth bass fishing in the Susquehanna River is excellent. If weather and water conditions remain reasonable, we should enjoy similar conditions right now.–*Art Michaels, Editor.*

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September/October 2000 Volume 69/Number 5

Pennsylvania ANGLER & BOATER

PENNSYLVANIA FISH & BOAT COMMISSION

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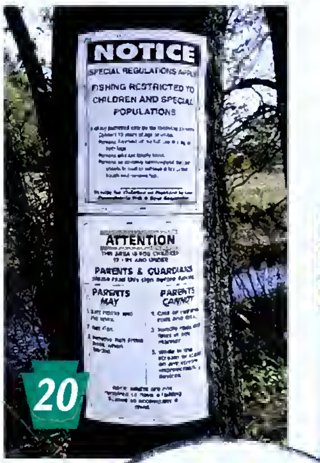

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About the cover

This issue's front-cover smallmouth bass was photographed by Doug Stamm. Also on the front cover are pictures of the new state-record brown trout (photographed by Charles Evans) and crappie. For the catch details, see page 58.

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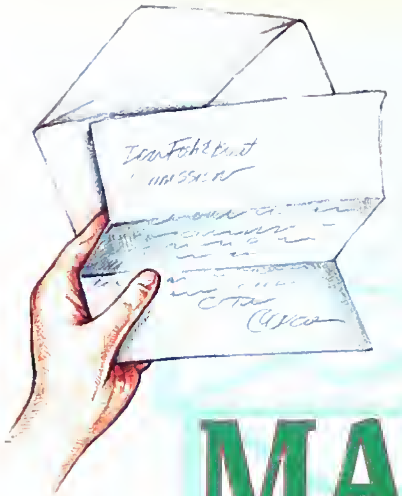


MAIL

Open house and kids

On behalf of my seven-year-old son, Grant, I wanted to express our thanks to the Commission personnel we met at your open house (Saturday, July 22). Your new facility is state-of-the-art and it looks like your staff are adjusting well to their new surroundings.

The folks we met were first-rate! They showed us around, answered our questions (seven-year-olds have lots of questions), and treated us like family. The friendly demeanor of all the Commission employees we met makes an excellent impression on us and on the others who attended.

Grant was particularly excited at the opportunity to make a fish print shirt and was interested in the lithographing process Ted Walke showed us in the print shop! He even got a candy jar to take home for mother!

I wanted you to know what a positive experience this was for us (particularly for Grant). I am grateful that he had such a good time. He's still talking about it, particularly because he was worried about being bored the "whole way" to Harrisburg (all of 30 minutes). I think it's key for our younger anglers to understand why we need the Fish & Boat Commission and how it works.

I understand there is a decline in youth fishing in our Commonwealth and I am grateful that Grant is a member of PLAY. In this day and age of instant gratification where kids can catch and land a trophy bass via CD-ROM games on a computer, it's a blessing to have a kid who has an interest in "real" fishing.–*Scott and Grant Hocker, Mt. Holly Springs.*

Open house, enthusiasm, pride

It is rare in this day and age to witness a feeling of enthusiasm and pride in a group of people who were our pleasure to meet during your open house–from our tour guide leader Kelly to our luncheon partner Gary Moore, to the printing press operator, and last but certainly not least, to the two ladies who helped Gracie print a "fish shirt" in the warehouse.

In this "I-Me" generation, it is refreshing to meet such people who are willing to help preserve the resources that we enjoy today for our future generations. You and your staff have accomplished a milestone with your beautiful headquarters and the success of the Conserve 2000 program, of which I am proud to be a small part.–*Jerry Neal and Gracie Roche, Harrisburg.*

Reporting fuel use

I am new to the boating world, but so far my family has enjoyed it greatly. We have been using Commission access areas and would like to ensure that the taxes from our boating gas usage go to supporting your agency. How do I claim the gas I use as boating gas, or where do I report it?–*Emailed question (from one or more people) taken from the "Q&A" area on the Commission's web site: www.fish.state.pa.us.*

The method we use is easy but not exactly scientific. As you know, your boat registration is valid for two years. In January of the year your boat registration expires, you will receive a notice from us. On the renewal form is a blank space, where we ask for the amount of fuel used in your boat the previous season. This information is fed into our computer database. Based on this sample, we estimate the amount of fuel consumed by all boats that year. We then petition the U.S. Treasury Department, which collects fuels tax money, for a refund proportional to the estimated motorboat fuel usage.

It is important that boaters report an accurate amount of fuel use. Underreporting lowers the average that is used to calculate the refund. On the other hand, reporting an excessive amount of use does not help because we know about how much fuel should be used in a certain class of boat, and those reports that greatly exceed this amount are discarded. So be truthful but be accurate.–*Dan Tredinnick, Press Secretary.*

Chauncy K. Lively

This is a sad note to tell you that Dad died from complications of pneumonia at the end of February. My sister Claudia and I were with him in Michigan while he was in the hospital. We are thankful that he was so healthy and vigorous until those last few weeks.

I know how much Dad enjoyed writing for the *Angler*. Perhaps that was one of the things that kept him young.–*Anne Lively, daughter of Chauncy K. Lively.*

Chauncy remembered

With great sorrow I learned of the death of Chauncy K. Lively. The angling fraternity, and fly fishers in particular, have lost a true gentleman and a creative fly tier and angler. I had the privilege of knowing Chauncy through my association with the Pittsburgh Fly Fishers and the Penn's Woods West Chapter of Trout Unlimited, and although I had not seen him in some years, I think of him often, especially when I'm near Falling Spring. My father passed to me his love of fly fishing and fly tying, but Chauncy, through Mac Seaholm and Chauncy's brother-in-law, George Aiken, is responsible for my interest in cane rods and photography and my love of small-water and wild trout.

The highlight of my trip through any issue of *Pennsylvania Angler & Boater* has been Chauncy's fly tying column. Chauncy's columns are an important part of a cherished legacy to fly fishermen everywhere.–*Gary M. Schweitzer, Hagerstown, MD.*

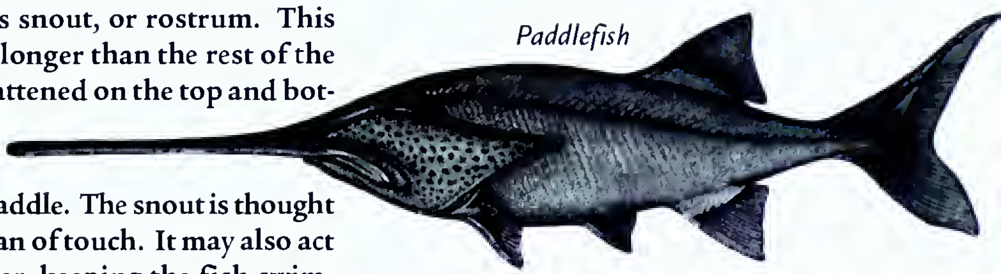
Chauncy Lively's fly tying column appears to be the longest-running column in the magazine written continuously by the same person. A Chauncy Lively fly tying article appeared initially in the November 1968 issue. Chauncy Lively's last article in *PA&B* appeared in the May/June 2000 issue.–*Ed.*

Joy of the day

I have been a Pennsylvania angler my entire life, learning from my father at age five. My three children–Casey, 15, Barry Jr., 8, and Courtney, 6–have been fishing with me and my wife Dana since they could first hold a pole. On opening day this year we rode down to the Bushkill Creek and found an area to fish between 10 or 12 grown men. On the first cast, all three of my children hooked fish. My daughter Casey hooked into a large rainbow trout, which after about a four- to five-minute fight broke her line. The disappointment on her face told it all, but she knows what sometimes happens when you fish, and she handled it well. Not less than 10 minutes later, Courtney set the hook on her first fish. After about a five-minute fight I netted the rainbow. Everyone on the entire creek applauded. All the grown men stopped fishing to watch her battle. Ten minutes later, Barry Jr. set the hook on his first rainbow trout and his four- to five-minute battle was on. Once again all the adult anglers stopped to watch the battle. Their support and comments were encouraging! Within one hour Casey had her limit of five fish and Courtney followed 10 minutes later with her limit. Barry Jr. finished with four. The most ironic thing of all is that when Courtney's fish was netted, in its mouth was my oldest daughter's hook–a complete family fish! Neither my wife nor I assisted our children on this day. The joy of the day was my greatest fishing experience ever. Thanks for giving my three children exactly what you gave me when my dad stood on the creek bank behind me 40 years ago.–*Barry Schaffer Sr., Easton.*

Paddlefish

In your "Gallery of Pennsylvania Fishes" on the Commission web site, I noticed an unusual fish called the paddlefish. Can you tell me more about them. Do we really have those in Pennsylvania? Where? Are you allowed to fish for them, or are they protected?–*Emailed question (from one or more people) taken from the "Q&A" area on the Commission's web site: www.fish.state.pa.us.*


Paddlefish

The paddlefish's most distinctive feature is its snout, or rostrum. This "paddle" is longer than the rest of the head and flattened on the top and bottom, like a paddle. The snout is thought to be an organ of touch. It may also act as a stabilizer, keeping the fish swimming in a horizontal position when its jaw is extended downward during filter-feeding. Paddlefish have many long gill rakers that let them strain tiny food organisms from the water.

Paddlefish are widely distributed throughout the Mississippi River drainage. In Pennsylvania, paddlefish were once reported from Lake Erie, the Allegheny River and the Clarion River. Paddlefish were extirpated from Pennsylvania waters of the Ohio River drainage about 1919, primarily as a result of polluted water. This means they were gone from the state, but still existed elsewhere in the Ohio River. In the late 1980s, it was determined that water quality in the Ohio River drainage in Pensylvania was again suited for paddlefish survival.

The Commission undertook a restoration plan for paddlefish in 1991 to return them to their native habitat in the Ohio and Allegheny rivers. The Commission has stocked fingerling paddlefish in these rivers for the last nine years. The Commission paddlefish stocking takes place in the Allegheny River from Pittsburgh to Clinton and in the Ohio River from Pittsburgh to the state line. Our biologists have sampled some paddlefish during their studies and have had many reports of paddlefish sighted or caught in these areas.

Paddlefish take a long time to become mature and capable of spawning. Paddlefish males are ready at seven years and about 40 inches long. Females take nine or 10 years, and are about 42 inches long when they first spawn. Paddlefish grow rapidly and may reach five feet long when they are 17 years old. They are believed to live for 20 years or more. The world hook and line record is over 140 pounds. If you're hoping to top that record in Pennsylvania, you'll have to wait awhile, though. Paddlefish are protected from harvest here to establish a reproducing population.–*Dan Tredinnick, Press Secretary.*

BACKTALK

Letters

Argue with the Commission. Applaud us. Advise us. The Fish & Boat Commission invites you to write letters to the editor if you have an idea on *PA&B* content; a question or concern about the Commission; something to say about fish and fishing, or boats and boating; or a helpful idea for anglers or boaters. Please hold letters to no more than 200 words. Letters and email to the Commission become the property of the Commission, and they are edited for clarity and space considerations.

Address all correspondence to: Art Michaels, Editor, *Pennsylvania Angler & Boater*, P.O. Box 67000, Harrisburg, PA 17106-7000; or contact the Commission at its web site: **www.fish.state.pa.us.**

Photo contest

If you'd like to see your photographs appear in more than just our "Cast & Caught" feature, you might want to enter your best of the best in the Commission's new photography contest. The contest runs from January 1, 2000, through December 1, 2000, and focuses on five main subject areas. A panel of judges will determine the winners. For complete details, see page 63 of this issue.

photo-Art Michaels

The Fall Walleye TURN-ON

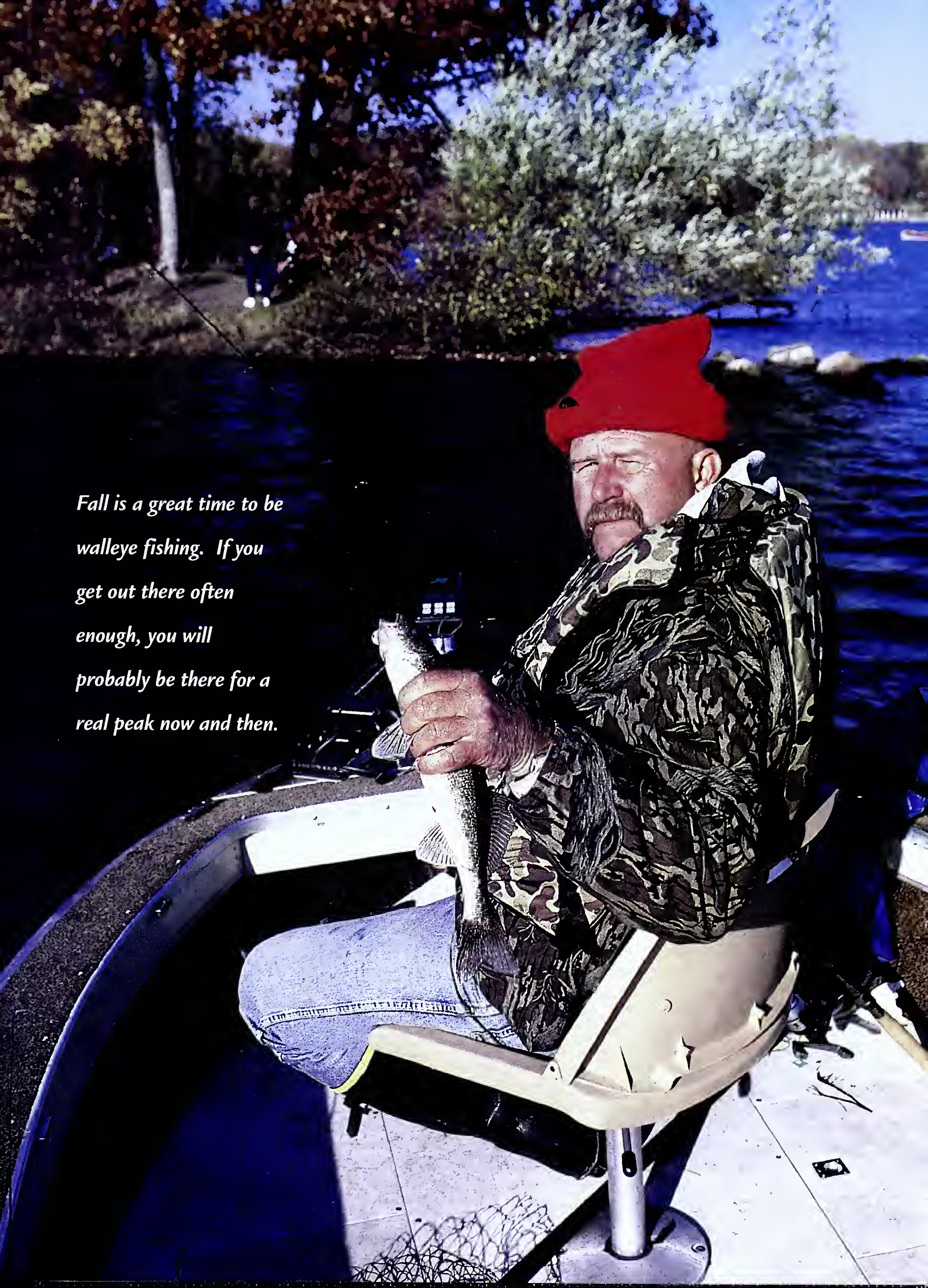
by Mike Bleech

photo-Mike Bleech

Around you the world is changing rapidly. Green leaves magically change to brilliant reds and golds, and then fade to lingering browns and grays, with just a few greens left close to the water. Mornings may be frosty on the hilltops. The first wisps of snow appear in the gray sky. Autumn is rapidly progressing. *The fall walleye turn-on is underway.*

It began soon after turn-over, when falling water temperatures cause previously stratified lake water to mix. Perhaps the falling temperature has something to do with it. It is happening in rivers, too, where there is no turn-over. Maybe walleyes are trying to lay on as much fat as possible before winter. But more likely, the food supply is just growing thin. The abundance of summer, brought on by the multitudes of fish that hatched during spring, is fading. Finding meals is more difficult. It requires more travel and more time. Walleye feeding periods must last longer.

There are peaks in the fall walleye turn-on, but anyone who tries to define them too finely has not been at this game long. Peaks are more apt to be caused by short-term conditions such as the weather, combined with the phase of the moon. If you want to watch for something special, look for warm spells that slow, or stop, the downward trend in water temperature.



Fall is a great time to be walleye fishing. If you get out there often enough, you will probably be there for a real peak now and then.

The Fall Walleye TURN-ON

These phenomena, known as Indian summer, are glorious times to be outdoors. Fishing is generally very good. But Indian summer is not the only peak during fall. Sometimes peaks occur during the nastiest weather. Sometimes peaks last only an hour; sometimes, a few days.

My point is that fall is a great time to be walleye fishing. If you get out there often enough, you will probably be there for a real peak now and then. But even if you miss the peaks, you should still enjoy some fine walleye fishing.

Finding the walleyes

In lakes, walleyes inhabit the same places they do during summer and winter with two main exceptions and a few modifications. The exceptions occur in man-made lakes where changes in water level might force walleyes to move, and in natural lakes where dying weeds force walleyes to leave the weed beds.

Modifications are caused by forage patterns. Because less natural food is available, walleyes tend to congregate more at the best feeding opportunities. You will generally find more walleyes at the points and around other major structures, which funnel or direct the movements of forage fish. Watch for schools of small fish on your sonar screen. When you find abundant forage, you have probably also found walleyes. Look for the larger signals that might be walleyes below the small fish, or even on the bottom. Many sonars do not separate walleyes from the bottom, so do not be too concerned if you do not see them.

Immediately following turn-over, walleyes might be in or along the edges of the deeper holes in some lakes. Look for this in the glacial lakes of the northwest corner of the state. This pattern might last for two or three weeks. This might be the only time of the year when there is enough dissolved oxygen at these depths to support active walleyes.

Walleyes might start gravitating toward spawning areas during late fall, though the spawn is still several months away. This is most evident in lakes where there are major spawning runs up larger tributaries, as in man-made lakes. We have used this pattern at the Allegheny Reservoir both in the main Allegheny River arm close to the New York border and in the Kinzua Creek arm, and in Raystown Lake far up the main arm where it narrows close to the width of the original river channel.

You will probably notice walleye movement even more in rivers and creeks. Walleyes generally move upstream during fall. If stream flow increases, which it typically does during fall, walleyes often move from our larger rivers into their larger tributaries where they will spend the winter. They might move from the Susquehanna River into the Chemung River, from the Juniata River into the Raystown Branch, and from the Allegheny River into French Creek.

As they do in lakes, walleyes tend to congregate near the more obvious river structure. Look for them along the edges of the gravel bars below riffles, near the mouths of major tributaries, along steep dropoffs, and around rocky humps. Instead of looking for forage fish, look for places where walleyes get a break from the current, except in the biggest river pools that provide a lakelike environment. You will seldom see schools of small fish on the sonar screen in rivers or creeks because the water is too shallow.

Dams stop all upstream movement, and congregate walleyes. Kinzua Dam has become famous for this. Walleye fishing is good in the Kinzua Dam tailwaters all through walleye season, but especially during fall and winter. Some anglers expect that the next state-record walleye will be caught there during fall or winter. Several weighing more than 15 pounds have been caught here, including at least one which was nearly 17 pounds. I believe I lost one just out of net range here several years ago that might have weighed 20 pounds.

Below some of the smaller dams, there are good fall walleye fisheries even in creeks where there is no appreciable walleye fishery at any other time of the year.

Fall walleye tactics

If you are a bait fisherman, now is the time to switch from nightcrawlers to minnows. Minnows are the right bait for nearly every fall walleye fishing situation.

Jigging spoon. When walleyes are in deep water, get right over them and fish vertically using a jigging spoon tipped with a minnow. This is the most accurate bait presentation you can use, especially if your boat is equipped with sensitive sonar. With a sensitive sonar, you will be able to see walleyes on the screen, hopefully, and you will be able to see your baited spoon lowered to the same depth as the walleyes.

Leadhead jigs. A leadhead jig tipped with a minnow can also be jigged vertically, but unlike a jigging spoon, it also

A floater placed on the line keeps your minnow off the bottom and adds color.

photo-Mike Bleech

can be used in almost any other situation by simply using various jig weights. The jig-and-minnow can be used either vertically or horizontally. This is probably the simplest, most versatile terminal rig for walleye fishing at any time of the year. If you carry an assortment of jigheads in sizes $^1/_{16}$-ounce, $^1/_8$-ounce, $^1/_4$-ounce, $^3/_8$-ounce and $^1/_2$-ounce, you are prepared for just about every fall walleye fishing situation you will likely encounter in Pennsylvania.

Minnows can be fished on bare jigheads, or jigheads dressed with either soft plastic, deer hair or other material. I prefer deer hair or feather dressing. They might not look as good as plastic in your hands, but in the water they merge with the real minnow in a very lifelike manner.

Jig-and-minnow rig. One of the reasons the jig-and-minnow rig is so versatile is that it is effective for retrieving or still-fishing. A combination of the two is perfect for fall fishing. Cast the rig and let it settle to the bottom. In rivers or creeks, let the current bounce it along the bottom. Retrieve it a few feet by slowly lifting the rod tip. Then let it sit on the bottom for a few minutes while the minnow struggles. Unlike strictly artificial lures, the jig-and-minnow looks just as good on close examination as it does with a fleeting look.

The biggest disadvantage to the jig-and-minnow rig is that you can not let the walleyes have it too long when you use jigs heavier than $^1/_8$-ounce because the weight will cause the walleyes to reject the bait. This results in a lot of misses, unless you use stinger hooks. A stinger hook is a small hook, usually a treble hook, that hangs behind the jig on a short leader. Do not impale this hook into the minnow. Just let it hang free. Hooking it into the minnow might seem like the logical thing to do, but it causes some problems. It will impair the movement of the minnow, and possibly kill it. During the cast, it usually causes the rig to spin, and in a few casts will seriously twist the line. Also, letting the stinger hang free seems to result in more hooked walleyes.

Hook-and-splitshot rig. A simple hook-and-splitshot terminal rig will usually out-fish a jig-and-minnow when walleyes are skittish because the walleyes do not feel any extra weight. The trick is to use just enough weight to get the minnow to the bottom, and to set the hook as soon as you feel the walleye moving with the bait. If you must use more than a small splitshot, add a sliding sinker above the splitshot so that the walleye can drag the line without feeling weight.

You can get a bit more tricky, too. Walleyes feed on a wide variety of small fish. Some of their favorite, or at least more common, foods are small fish such as darters and sand pike that live among the rocks. A jig-and-minnow or the plain hook-and-splitshot rig is perfect when walleyes are feeding on these fish. But sometimes walleyes are feeding on shiners or other small fish that suspend well above the bottom. When this is the case, when the walleyes are looking up, add a floater just above the hook, or use a floating jighead to keep your bait a few feet above the bottom.

Be very suspicious that walleyes are looking up whenever most of your hits occur while your bait is falling, or when you see baitfish on your sonar screen.

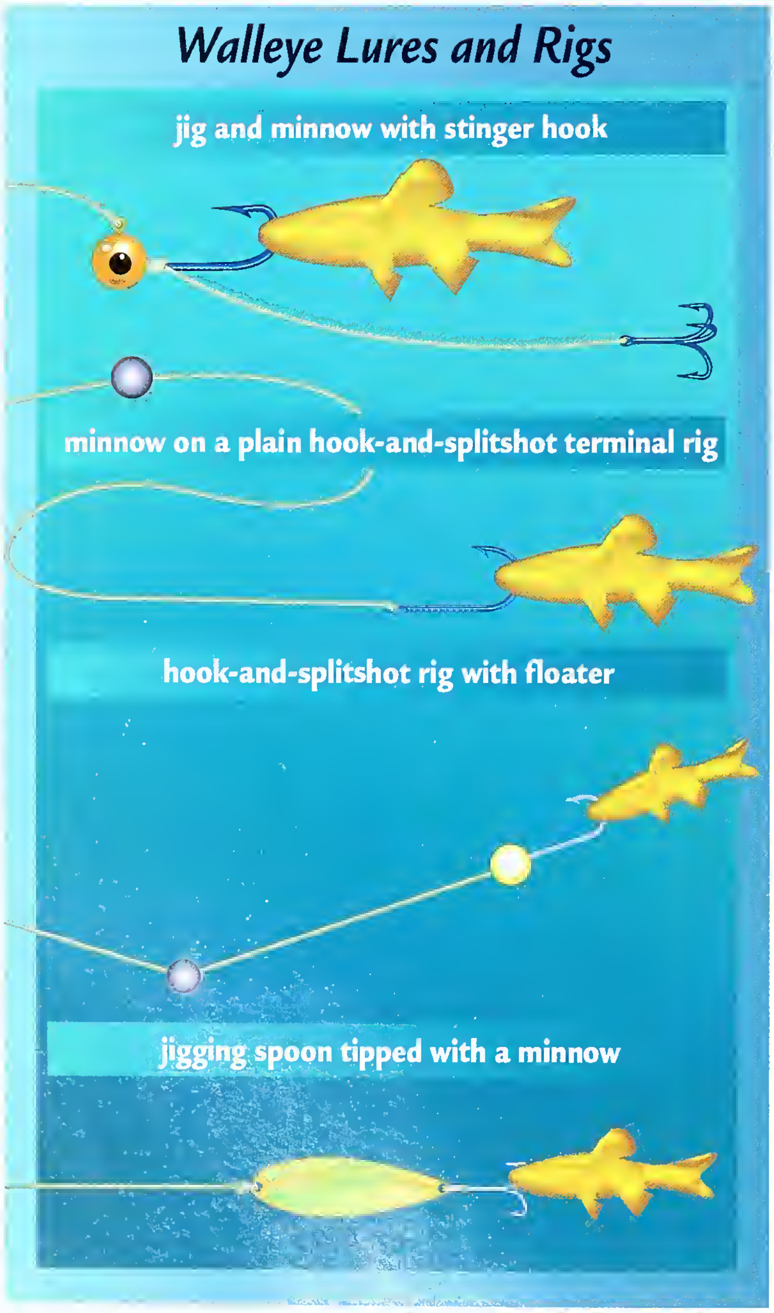
Jigs and floaters both provide the advantage of color attraction. Whether it is just a matter of greater visibility or if walleyes are actually attracted by certain colors, colors often make a big difference. During fall, chartreuse, yellow and orange are generally the best colors. I suspect that the reason blues and greens are not as effective as they are during summer might have something to do with the reduced amount of plankton. Or it could be that these more natural colors are better when there is more natural food in the water and walleyes are more picky about what they eat.

You will probably catch more walleyes year-round with live bait than you can with artificial lures. Yet, there are many situations, mostly short-term, when artificial lures are better. Fall is the one long-term period when artificial lures might be just as effective as live bait, because of the relative lack of natural food. Walleyes can not afford to pass up easy meals. Artificial lures have the advantage because, unless you catch your own minnows, minnows are more expensive than artificial lures. The last batch of minnows I bought, and that was just a few hours ago, cost almost six dollars. That is about the same as the cost for one good crankbait or a big handful of jigs and soft-plastic bodies. Of course, this cost comparison depends on whether or not you lose any of your artificial lures.

A leadhead jig dressed with a chartreuse soft-plastic screw-tail body is a good choice for almost any fall walleye fishing situation. Soft-plastic bodies have an advantage over hair or feather jig dressing when no bait is added because of the natural feel of soft plastic. Walleyes will hold soft plastic longer, and even swallow it. You can add a minnow, of course, but it usually is not necessary. A couple of other color patterns I like during fall are brown bodies with orange tails, and all white bodies.

Vary your retrieve with jigs. Sometimes walleyes prefer a hopping action, sometimes a swimming action. As is the

photo-Mike Bleech; graphic-Ted Walke


Walleye Lures and Rigs
jig and minnow with stinger hook
minnow on a plain hook-and-splitshot terminal rig
hook-and-splitshot rig with floater
jigging spoon tipped with a minnow

case with the jig-and-minnow rig, use the lightest jighead possible. I suggest that you carry a lot of $^{1}/_{8}$-ounce jigheads. This is plenty of weight for depths beyond 20 feet in lakes, and at least to 10 feet in mild river current. This light head combined with the bulk of the plastic body and the line gives the jig a light, lifelike appearance when it is moved. You do not want your jig to plunk down to the bottom. Instead, you want it to sink very slowly, and be almost buoyant at the working depth near the bottom. The jig should ride just off the bottom at a very slow retrieve speed.

One of the secrets of using artificial lures is imagining the appearance of the natural food you are mimicking, and visualizing your lure behaving in the same manner. This requires a lot of concentration, and maybe you have to be a little crazy. But I absolutely guarantee that once you can put yourself in the frame of mind to do it, you will catch a lot more fish.

Crankbaits. Fall is the time for big walleyes, and perhaps the best method for big walleyes in rivers is casting minnow-shaped crankbaits. The key to making this method productive is using crankbaits that run within less than two feet of the bottom. This requires an intimate knowledge of the water depth, and of the running depths of various lures. Differences in running depths are more subtle than with deeper-diving crankbaits, yet these subtle differences are critical. Depths vary almost anywhere you fish in rivers, of course. You want the lure to be at the correct depth in relation to the depth where you expect to find big walleyes.

There is a steep, rocky dropoff in the Allegheny River within walking distance of my home. The spot usually holds a few big walleyes from late October through November. When big walleyes are active, they move to the top of this dropoff where the depth is about four feet at normal fall water flow. Casts hit the water over depths of about 20 feet. The lures I use here dive to about three feet, so during the retrieve the lure is in the productive zone for just about five feet as it passes the top edge of the dropoff. The remainder of the retrieve is a waste of time except for allowing the lure to dive to running depth.

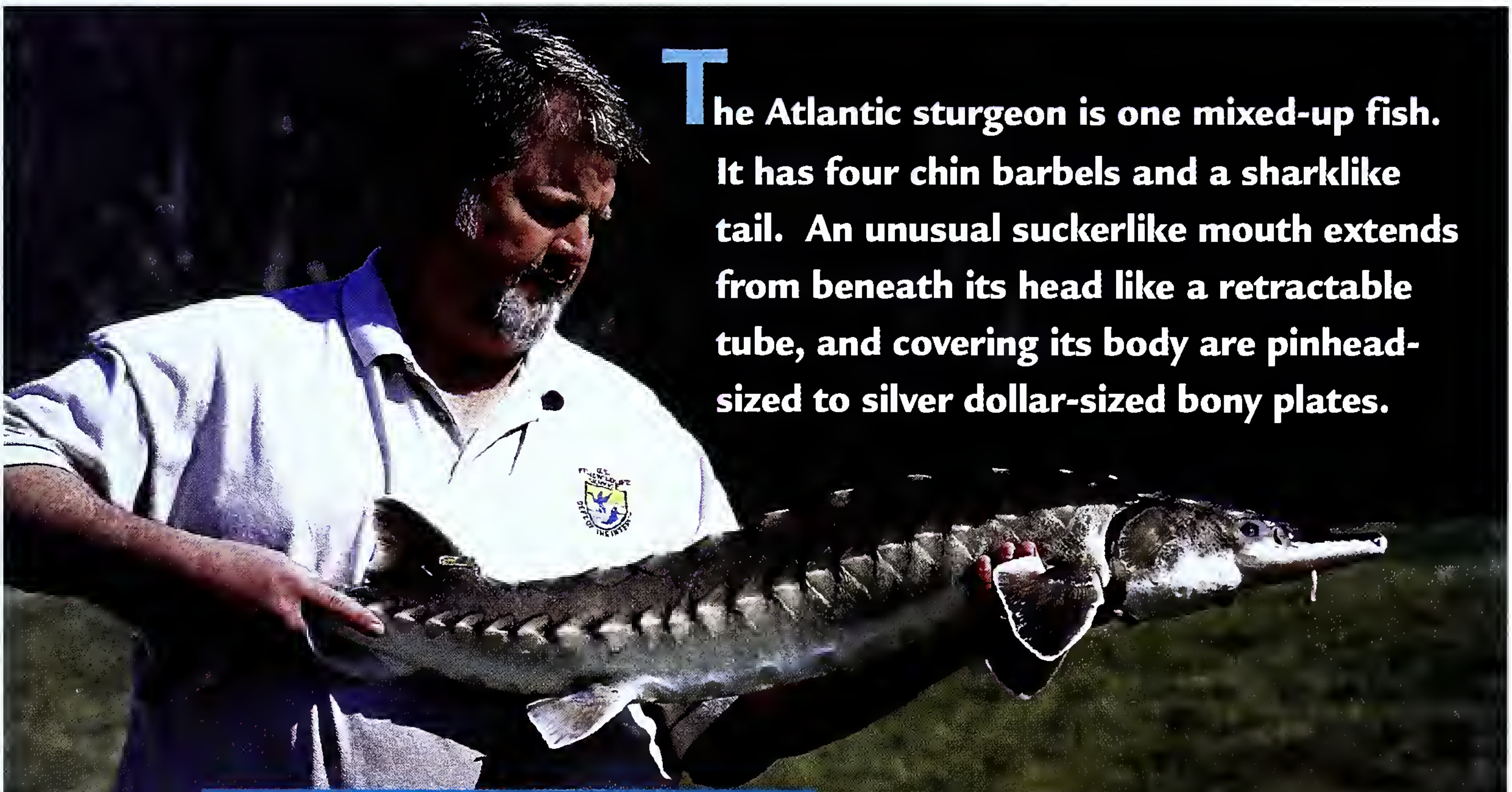
This is target fishing. Cast just far enough to get the lure to the right depth at the right place. A slow, steady retrieve is usually best during fall. Stick with just one brand and size line because running depth will vary if you change lines. It is difficult enough to remember the running depths of the various lures with just one line.

Crankbaits are also very effective along the edges of gravel bars below riffles, and anywhere else where depths are within their reach. Generally, walleyes will be in shallower water during fall in rivers than they will be in lakes, so shallow-running minnow-shaped crankbaits are most useful in rivers.

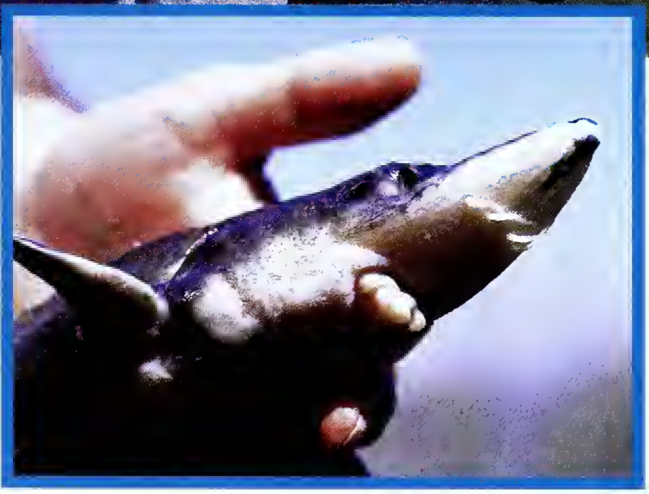
There is no need to master all of the lures and terminal rigs I have mentioned. Pick those you enjoy most and those that cover the situations you encounter during the fall walleye turn-on.

BONY PLATES & Barbels

by Art Michaels



The Atlantic sturgeon is one mixed-up fish. It has four chin barbels and a sharklike tail. An unusual suckerlike mouth extends from beneath its head like a retractable tube, and covering its body are pinhead-sized to silver dollar-sized bony plates.

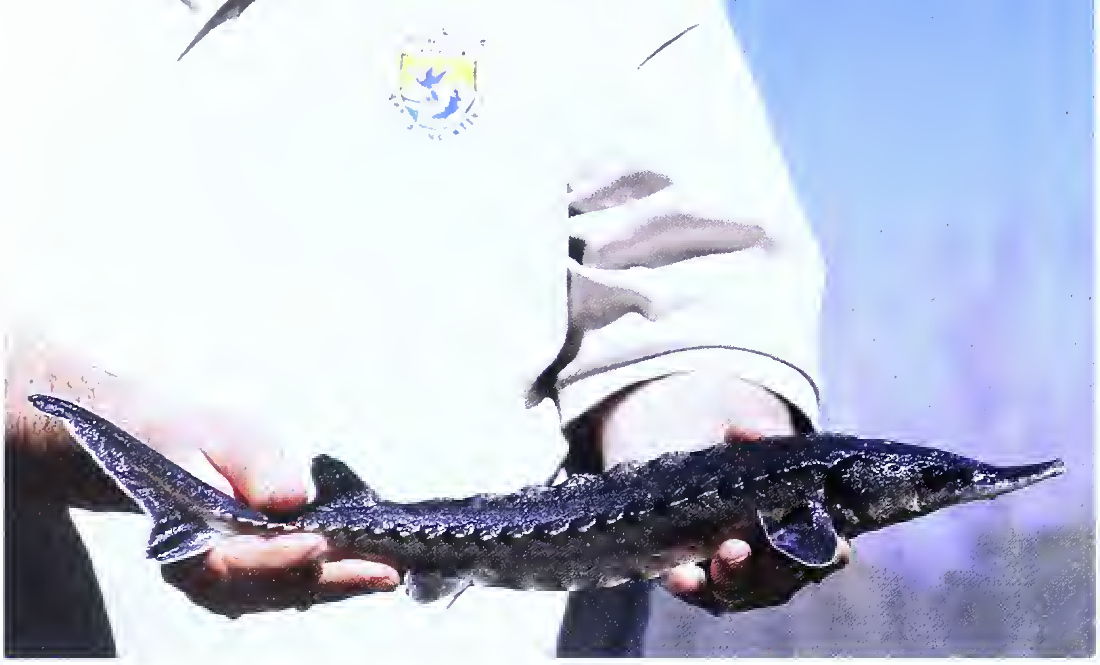


photos-Art Michaels

Northeast Fishery Center biologist Bill Fletcher (top photo) holds a four-foot, 25-pound Atlantic sturgeon. The Atlantic sturgeon has catfishlike chin barbels and a suckerlike mouth.

Extinct sturgeon relatives date back more than 70 million years. You might think that a strange fish like the Atlantic sturgeon would have become extinct eons ago. But this fish, which looks as if it came from a different time and a different place, is still around. Biologists at the U.S. Fish and Wildlife Service's Northeast Fishery Center, at Lamar, Pennsylvania, have taken on the job of keeping the remarkable Atlantic sturgeon around.

The Atlantic States Marine Fisheries Commission (ASMFC) has determined that the Atlantic sturgeon is a species of special concern. ASMFC was formed some 60 years ago by the 15 Atlantic Coast states to assist in managing and conserving their shared coastal fishery resources. Pennsylvania is a member. In Pennsylvania, the Atlantic sturgeon is an endangered species.



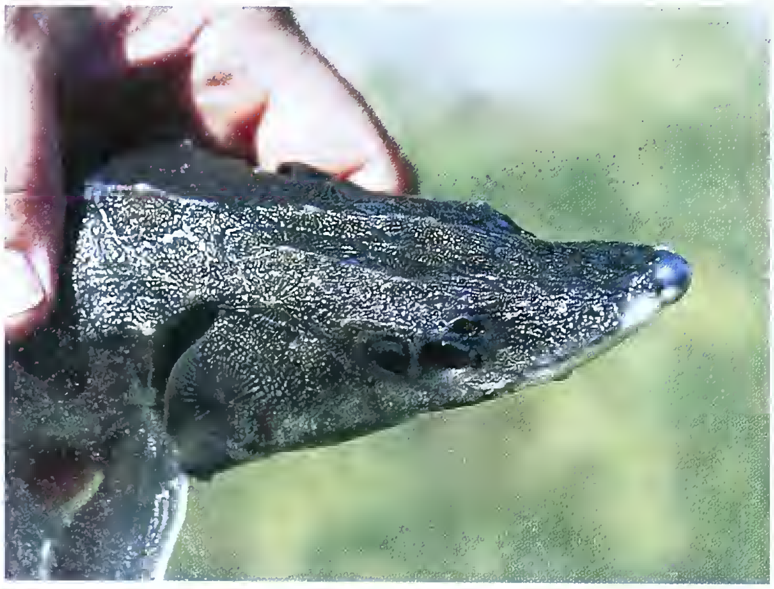
This Atlantic sturgeon (left) is about two years old. The largest sturgeon at the National Fishery Center are about six to seven feet long and weigh about 170 pounds. Covering the Atlantic sturgeon's body (photo below) are bony plates that range in size from a pinhead to a silver dollar. Atlantic sturgeon are classified with bony fishes, but their bone structure is primitive and noticeably different from Pennsylvania's more common fishes.

"ASMFC has established management plans that will prevent the fish's becoming extinct," says Bill Fletcher, Chief of the Northeast Fishery Center's Technology Center. "We're writing a culture manual for Atlantic sturgeon. This 50-page document will include everything–how to capture and transport them, how to prevent and treat disease, how to help them survive in the hatchery from the wild, and how to spawn the fish and raise the young."

The ASMFC Atlantic sturgeon management plan has several parts. The Northeast Fishery Center's main objective is to develop culture techniques for Atlantic sturgeon. If stocking becomes necessary to restore this species, learning how to raise Atlantic sturgeon will be necessary, and starting now is better than waiting until it's too late to learn.

Another part of the plan is for the Northeast Fishery Center to raise brood stock to evaluate the potential of the species for aquaculture.

"Raising Atlantic sturgeon in a hatchery is very different from raising trout," says Fletcher. "An Atlantic sturgeon's life span is more than 60 years. They take so long to become sexually mature–males, around 10 years, and females, around 15 years. We're taking them through a full cycle. We've captured wild brood stock and are now raising their progeny in the hatchery environment all the way through to their reproducing again. It's already taken eight years to gain a good understanding of these fish and how to rear them."



The PA Fish & Boat Commission and the Northeast Fishery Center cooperate in the effort to restore Atlantic sturgeon. Because Atlantic sturgeon are endangered in Pennsylvania, the Fish & Boat Commission issues a special permit to the Northeast Fishery Center for the possession of Atlantic sturgeon. In addition, the Commission issues the Center a scientific collector's permit.

Several years ago, the PA Fish & Boat Commission and the Northeast Fishery Center conducted a joint Atlantic sturgeon study using sidescan sonar in the Delaware River. Atlantic sturgeon had gathered in certain river areas at 30- to 50-foot depths. Commission and Northeast Fishery Center biologists used the sidescan sonar to explore the habitat, and understand why the sturgeon gathered in the area.

The biologists found bottom ridges where the sturgeon were holding. During periods of high flow, the ridges provide some protection from the current. This cooperative effort was valuable because it helped biologists define one kind of cover that draws the sturgeon.

The Fish & Boat Commission and the Northeast Fishery Center also work together in American shad and striped bass restoration efforts, and in virology–fish health–work.

"In 1880, a representative of the federal government wrote, 'The Delaware River had a [sturgeon] fishery that exceeded all others,'" says Fletcher. "Before the tobacco industry grew in this country, sturgeon were the main export from colonial America. Habitat loss, overharvest and the inability of the natural population to rebuild caused their decline.

"Restoring the Atlantic sturgeon is important," says Fletcher. "So many times you hear that threatened or endangered species are insignificant and have no commercial value. The Atlantic sturgeon has a high commercial value. In addition, restoration is important conservation work because we don't know the role of the Atlantic sturgeon in the aquatic ecosystem."

Restoring our historical and cultural heritage is also part of the Atlantic sturgeon's story. And what an old, remarkable tale it is.

Casting Lines

with Dave Wolf

Carp Fest!

I have been told that there is nothing beautiful or glamorous about carp. It has been reported that they are a useless "trash fish," better suited for garden fertilizer than to swim in our lakes and rivers.

It wasn't that many years ago when a "traveling" cardboard replica of a carp with a cape was passed down through the years, as "carp fest" became an annual event with a group of anglers. Several office staff took part in the annual tournament without stringent rules and regulations. There was no master of ceremonies, no festivities when the "trophy" was passed, and there was no weigh-in. There was only a simple admission, blushed with the confession that a certain individual may have taken the biggest carp during that given year.

Despite the red face and the sloughing off of any questions the "trophy" might provoke, it seemed only fitting that no one would own up to taking a trophy carp. Some years later, I wondered why. After all, red drum are a prized gamefish along the Carolina Coast, and fishermen flock there in great numbers to be guided, at quite an expense, to these wonderful gamefish. Because I have been fortunate enough to catch many red drum on a fly rod, I believe that I am capable of making some comparisons.

Red drum are bottom feeders and, when hooked, are magnificent fighting fish. Carp are bottom feeders and, when hooked, put up a battle that is comparable to any gamefish of similar size that swims in our waters.

I recall vividly every encounter I have had with a carp over 10 pounds. I recall every red drum I have hooked of the same size. Throughout the years, many carp have broken me off. The same holds true for red drum.

Guides pole you along the inlets and in the sounds for red drum. Here I clamber about in an old beat-up johnboat. When I fish for red drum, I wear an outfit that makes me look like a well-versed fly fisher. When I fish for carp, I often wear tattered blue jeans and a worn t-shirt.

When fishing for red drum, I design crab and shrimp patterns with great care. When fishing for carp, I just might sneak along a can of corn. I have taken them on flies, but I have not come up with a deadly pattern or found one that works with any amazing regularity.

My daughter fought a carp for close to an hour as I struggled to keep the canoe in position on a glide on the Juniata River. It was an intense battle, and she finally did land the huge carp on 4-pound test, and I did manage to keep the canoe below the ever-moving fish. She was impressed, and it was a big fish. But, unfortunately, when she told others of the species of fish she had landed, all those perked-up ears went deaf.

Sadly, if it would have been a red drum, she would not have lost her audience and her story would have concluded with a round of high fives. We released the fish and did not weigh it, but it exceeded 15 pounds and may have gone as much as 20 pounds. It was a darn good fish, no matter what species it was.

I found a large carp feeding near a dock at Pinchot Lake and cast a weighted crayfish pattern in its path. When the carp fed in toward the imitation, I moved it ever so slightly. The carp took it and the last time I saw him he was swelling the water in the middle of the lake with 100 yards of backing and 90 feet of fly line trailing behind him.

Looking down at the bare spool and knowing the expense of a fly line, I grabbed the little back remaining, pointed the rod toward him, and snapped him off. The fish never slowed from the time I hooked him until we parted–I have landed red drum on far less line.

Near Three Mile Island in the Susquehanna River, I have hooked and lost more carp than I can remember. Those that I did land required hot pursuit over the boulders that were strewn throughout the water and along the shoreline. Most of these fish were taken with the same fly rod with which I have taken bonefish and baby tarpon in the Florida Keys. I used the same pound-test tippet I used on bonefish, material that tested six pounds.

I cannot tell you how many times I have hooked carp when fishing for bass on the Susquehanna and on many lakes. There was a time when such an experience was an inconvenience. I had relented to peer pressure, as have so many others. Today, a carp is a welcomed combatant, one that never lets me down. Carp have caused me to tear waders and scuff and bruise my knees, and they have threatened to break my rod in half. Although other species of fish have done such things to me, few others have the power to break off as easily as the carp.

No, there are no magnificent leaps or sipping rises, unless, of course, the cicada is present, as they had been years ago when I took carp on popping bugs at Raystown Lake. But after watching carp take a top-water lure, you will quickly realize that they are not designed to do so, and that it takes some practice to know when to set the hook.

Carp are carp, and they have different characteristics than any other species of fish I know of. But that is what sets them apart. Why they have not climbed the ladder to prosperity in the fishing world is beyond me. But one should recall that it wasn't that long ago when the red drum gained its claim to fame. Perhaps the carp, like the red drum, is a late bloomer, and maybe we will live to see the day when guides drift clients into the haunts of the carp, and this great fish will find its following.

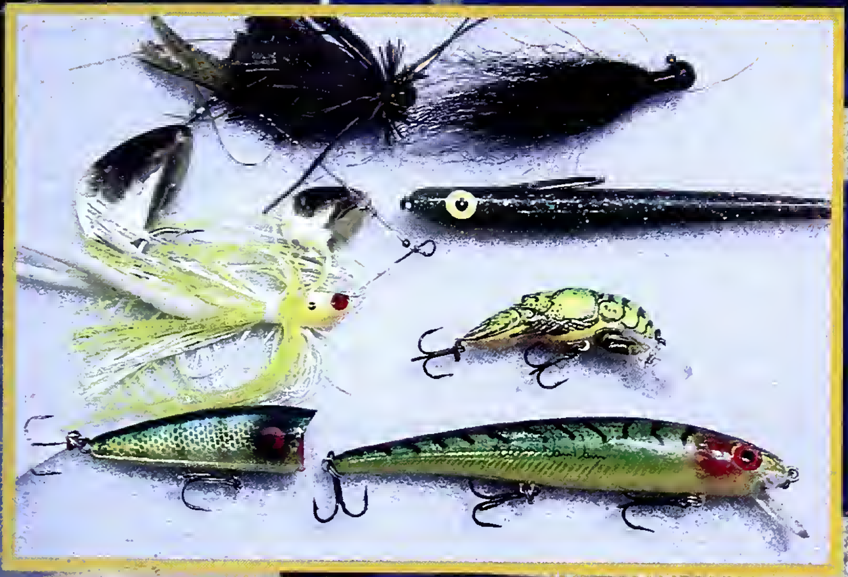
photos-Vic Attardo

Smallmouth Bass Lakes in the East

by Vic Attardo

My love affair with smallmouth bass started when I was eight or nine years old and my father drove me to some unremembered stream in eastern Pennsylvania, where I fished and he took a nap. For equipment I had a fiberglass rod, an oversized spinning reel and one lure, a little brass spinner that I probably tied directly to the line.

If a black or black/brown jig doesn't attract a smallie, few other subsurface lures will.



Above, hair and rubber jigs, soft-plastic baits, spinnerbaits, buzzbaits and hard stickbaits are some of the offerings that can help you score.

The memories are somewhat vague, but I know I threw the spinner in the direction of a rural bridge, and to my great surprise I caught a nine- or 10-inch smallmouth bass.

When I eventually figured out what smallmouths were and where they lived and what they ate, I pursued the mini-mouths more than any other fish in my childhood. But it wasn't until I was wallowing in my mid-teens that I caught my first smallmouth from a lake.

This, too, was another surprise! Until that time, all my smallies had come from streams and rivers. Now, all of a sudden, I was catching smallmouths, big smallmouths, from deep, still waters.

Somewhere along the timeline I met Billy Westmoreland. Billy was a Dixiephile who wrote magazine stories and did amazing TV shows. Billy loved smallmouth bass as much as I. He did most of his fishing in a large boat over mammoth lakes. He fished places like Bull Shoals and he taught anglers more about still-water smallmouth fishing than any other celebrity before or since.

In the last 35 years, I've been working on my smallmouth lake fishing as if I needed the points to get into heaven. And through all this sweat and toil, I've come to the conclusion that the quality of eastern Pennsylvania smallmouth lakes ranks pretty high.

Admittedly, many of our impoundments are mostly largemouth lakes with only a smattering of smallmouths. But in others, the smallmouths have the population edge. Lakes such as Wallenpaupack and Beltzville have excellent numbers of mini-mouths with fish up to four pounds. On the flip side, Nockamixon, Marsh Creek and Blue Marsh have more largemouths than smallmouths, but the latter reach an admirable size. There are also all the lakes in the middle, places like Fairview Lake and Muddy Run Lake, where smallmouth catches are incidental, but the bass belong to the NFL–Notable Fish Length.

Lake locations

One thing I've learned about lake smallmouths in eastern Pennsylvania is that they're often found at the lower end of the impoundment. During the spring, smallies are more spread out and congregate over good spawning grounds in any part of the lake. Early in the season, I find a lot of minimouths in creek coves in the upper part of a lake. But as the season progresses, they inevitably advance toward the dam or to the docks in the lower end.

At Nockamixon, Blue Marsh and Beltzville, 90 percent of the fall bass come from the lower end. In these lakes that's where the better smallmouth habitat lies.

This is particularly true in Wallenpaupack, Blue Marsh, Beltzville, Marsh Creek and Nockamixon. Last season, before the drought hit, partner Nick Canestra and I caught some fine smallies up in Beltzville's Pohopco Cove on May 3. The smallies were hanging beneath deadfalls on muddy flats just like largemouths.

But the year before, angler Perry Haas was the impetus for a second-place finish as we fished around the boulder-strewn dam during a Beltzville club tournament on November 15. Using silicon-skirted jigs of Haas' own creation, we rode the windy waves back and forth along the gaging tower and rocks. The smallmouths were in there thick, and only a severe cold front hampered the bite. Water temperature on this outing was 52 degrees, while the spring trip with Nick had a 54-degree reading.

For the last couple of years, I've made a spring trip up to Lake Wallenpaupack with angler Chuck Hallman. The timing has to be perfect, and when it is, we've blasted the smallies around the Tafton dike at the lake's lower end. At the same time, some of the lads have reported good smallmouth in the upper lake.

On May 17, with the water temperature in the low 50s, Hallman and I worked the area from the Wilsonville Beach to the docks below the dike. A moderate breeze was pushing against the shore, and we put our hair jigs at the water's edge. The result was some excellent catches. Two weeks later, the bass had moved back from the dike and were in deeper water, and the boys in the upper end were tagging way more largemouths than smallies.

That same season, Haas and I fished Wallenpaupack on July 12. Boat traffic and high water temperature kept the bass away from the shallows during the day, but Haas had an excellent summer pattern. Still working the lower dike region of the lake, we scratched every boat dock in 15 feet of water and came away with a wonderful catch. The report I got the same day from the upper end of the lake was all largemouths and no smallies.

Now, I'm not saying that during the summer you won't find some fish around suitable habitat in the upper end or middle section of a lake, but by and large, more smallmouths will be in the lower end, particularly if the water is cooler. Once the water temperature drops in the fall, the best chance is still in the lower end. At Nockamixon, Blue Marsh and Beltzville, 90 percent of the fall bass come from the lower end. In these lakes that's where the better smallmouth habitat lies. Fairview Lake in Pike County is a different story altogether. Because of its cool, deep waters, I catch smallmouths just about everywhere, except way back in the weedy coves.

Tools for the job

When it comes to smallmouths in lakes, 70 percent of the time I'm using spinning equipment, 20 percent fly gear and 10 percent a casting outfit.

On summer evenings when the smallies rise to the top, put a fly rod in my hand and call it heaven. A variety of poppers tied to a nine-foot, five-weight rod with floating line and a standard nine-foot 3X leader and tippet will muster the bass. Also keep a selection of dry flies, such as a Tan Caddis and attractor patterns like the Royal Wulff. I've had nights with caddis flies on Wallenpaupack and Marsh Creek that we should have filmed. When baitfish are grabbing mosquitoes and other tiny bugs, put on a silvery streamer. The smallmouth often travel for the baitfish.

When it comes to spinfishing, I want hair jigs, rubber jigs, soft-plastic shad and stickbaits, hard stickbaits and spinnerbaits.

If a black or black/brown jig doesn't attract a smallie, few other subsurface lures will. I tie my hair and rubber jigs to six- or eight-pound line using a medium-heavy spinning rod designated for soft plastics. The 6 $^1/_2$-foot rod should have a sensitive tip and enough backbone to set the hook hard. The same style rod fits my needs for buoyant soft plastics. For smallmouths, I like a four-inch soft-plastic bait.

Spinnerbaits and buzzbaits are excellent offerings, but consider down-sizing. Spinnerbaits of $^1/_4$-ounce and $^3/_8$-ounce are good for all bass, but also try $^1/_{16}$-ounce when mini-mouths are the main target. Spinning tackle with six-pound test is fine for the smaller spinnerbaits, but I prefer beefier casting equipment for the larger safety-pin lures and buzzbaits. A baitcasting reel with a gear ratio of 5.4:1, or lower, teamed with 12-pound test, is a good choice for these high-resistance lures.

Winning techniques

Something you have to learn to catch smallmouths on many of our eastern Pennsylvania lakes is how to work docks. Haas is a master at the game and his success at a host of Wallenpaupack tournaments is ample proof.

Haas fishes his jigs in two ways, either with the slow lift and fall that most jig anglers use, and also a simple dragging style. In this latter technique, he allow the jig to reach the bottom. Then he points the rod tip at the water and with a moderate retrieve skids the bait across lake floor. Wallenpaupack is often rocked by waves, so the rise and fall of the boat imparts additional action.

"You always read that you should be keeping in contact with your jig," Haas said." "If 'keeping in contact' means watching the line, that's okay. But if it means keeping the line tight when you drop the jig, it's not."

Haas actually allows his 1/8-ounce jig to fall beside a dock on a slack line. The line loops off the face of his spinning reel in tight curls and then slides across the water's surface.

"When you drop a jig and it hits the bottom, you get slack. But after it stops, and you see it get more slack and the line moves off a bit, you know a bass has sucked it in and is swimming off," Haas said.

Another part of Haas' jigging technique is the nearness he maintains to his target, the boat dock. Often the bow of his boat is so close, one short step would take him deck to plank.

"Guys say that if you fish too close to a dock, you'll spook all the fish," Haas said. "Well, these fish are used to the noise of people walking on the dock, engines starting and everything. They don't spook easily."

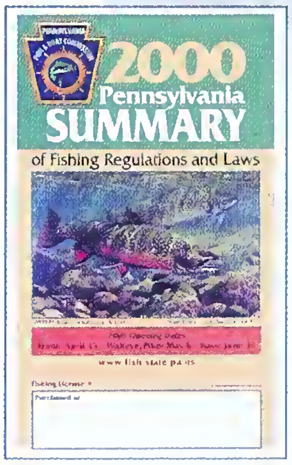
One of my smallmouth strategies involves working the boulder-strewn area near dams and dikes. When wind is blowing against the structure, or on cloudy days, fish tight to the shore. But when there is no breeze, or it's blowing back away from the bank, bring your boat out some 30 to 100 feet from the rocks and cast into deeper water. I took my own tournament win on Wallenpaupack by fishing behind the boats that were casting close to shore one calm, warm day.

On lakes such as Blue Marsh and Nockamixon, an angler has to concentrate on the straight rock cliffs scattered around the impoundments. Nick Canestra and I score by tossing jigs against the jagged faces and letting the jigs settle through the deadfalls and ledges at Nockamixon. Even though I don't often use a pork or plastic trailer while fishing a shallow, slopping shoreline, Blue Marsh and Nock smallies holding tight to the ledges and downed trees require it.

The How's and Why's of Fishing Regulations

by *Linda Steiner*

When an angler buys a fishing license, he or she is handed the *Pennsylvania Summary of Fishing Regulations and Laws*. Inside are all sorts of specific do's and don'ts that anglers need to follow when they're on a waterway.



2000 Pennsylvania SUMMARY of Fishing Regulations and Laws

The year 2000 fishing summary is 72 pages long. The rules range from how many of a certain fish can be kept in one day to what a person can and can't do on Fish & Boat Commission property, to many program and place-specific special regulations. They make for a long read.

Why are there so many laws and regulations, an angler might ask. Where did they all come from, and who decides the way I have to fish, anyway?

According to Guy Bowersox, Assistant to the Director of the Bureau of Law Enforcement, laws and regulations are different in how they are created. A law like the Pennsylvania Fish and Boat Code is an act of the Pennsylvania Legislature. It deals with such weighty details as creating the Fish & Boat Commission and defining its duties, empowering the Commission to set seasons, sizes and creel limits, allowing it to establish and maintain fish hatcheries, and determining how its law enforcement officers will operate.

NOTICE
SPECIAL REGULATIONS APPLY
FISHING RESTRICTED TO CHILDREN AND SPECIAL POPULATIONS
Fishing permitted only by the following persons:
Children 12 years of age or under
Persons deprived of the full use of a leg or both legs.
Persons who are totally blind.
Persons so severely handicapped they are unable to cast or retrieve a line or bait hooks and remove fish.
Penalty for Violation as Provided by Law
Pennsylvania Fish & Boat Commission
ATTENTION
THIS AREA IS FOR CHILDREN 12 YRS AND UNDER
PARENTS & GUARDIANS
please read this sign before fishing
PARENTS MAY
1. Bait hooks and rig lines.
2. Net fish.
3. Remove fish from hook when landed.
PARENTS CANNOT
1. Cast or retrieve rods and lines.
2. Handle rods and lines in any manner
3. Wade in the stream or stand on any stream improvement devices.
note: adults are not required to have a fishing license to accompany a child.

Kinzua Creek, Allegheny National Forest, McKean County

Powell Creek, Dauphin County. Fishing regulations sometimes address management of the state's fisheries and the behavior of Pennsylvania anglers.

large photo-Linda and Bob Steiner; inset photo-Art Michaels

Certain state agencies, like the Fish & Boat Commission, are also empowered by law to adopt regulations. Although the Fish and Boat Code is not unchangeable, says Bowersox, provisions do take the state equivalent of the proverbial "act of Congress" to revise. Regulations, on the other hand, are more flexible and can be modified as needed by the Fish & Boat Commission itself, following a shorter procedure. The board of commissioners votes on proposed regulations at its meetings, held four times a year or more.

Before a regulation is adopted by the board of Fish & Boat Commissioners, it is published in the *Pennsylvania Bulletin* as proposed rulemaking, and a public comment period is offered. "The ability to set regulations allows the agency to react and make those changes or implement things to do routine, daily business or manage the resource, without going through the lengthy process of getting a law changed, and burdening the Legislature," Bowersox says.

Types of fishing rules that are best set by regulation include details of seasons, sizes and creel limits on fish species, both statewide and water-specific. If an angler notices a change from one year to the next in his fishing summary, the difference is probably the result of a regulation alteration. For this year, a "What's New For 2000?" box on page 11 details notable differences from 1999, including a new creel limit for trout (from 8 to 5), new bass fishing rules, new Panfish Enhancement regulations and more.

Bowersox says that regulations may begin as proposals the public sends in, they may originate from the board of commissioners, or they may start with the Fish & Boat Commission staff, perhaps a suggestion from a field officer or an area fisheries manager who sees a need, a problem or a way that angling or resource protection can be improved. The proposal for a regulation might be for a whole new regulation, a change to an existing rule, or even a call for elimination of a regulation. The proposal is made through the "chain of command," says Bowersox, and is reviewed by the Fish & Boat Commission's legal counsel and senior staff members. If determined that there is a valid basis for the proposed regulation, a formal proposal is prepared and taken before the board of commissioners for consideration.

Basically, fishing regulations address two fronts–management of the state's fishery resources and addressing the behavior of Pennsylvania's legion of anglers. People-control regulations protect the Fish & Boat Commission's property by setting guidelines for public use, like not allowing overnight camping, digging out shrubs and trees, disposing of

DELAYED HARVEST
FLY FISHING ONLY
SPECIAL REGULATIONS APPLY
Penalty for Violation as Pr...
Pennsylvania Fish & Boat ...

Caldwell Creek, Warren County

photo-Linda and Bob Steiner

rubbish, defacing signs and commercial use (without special permission).

Regulation changes can also be the result of keeping up with the effect of technology on fishing, says Bowersox, as when modern gadgets, like electronic fish finders, influence catching success and contribute to overharvest. Organized, technologically advanced fishing contests, competing for the resource, can stimulate new regulations as the Commission tries to protect the safety of participants, consider the concerns of other anglers and protect the fishery itself. That's why permits are required for organized fishing events, and why they may not be approved or why they may require revision, like not allowing a tournament during the prime spawning period, says Bowersox.

Requiring the display of a fishing license may help anglers to "police themselves," says Bowersox, besides letting law enforcement officers determine quickly if fishermen have "paid for the privilege." A subtler, probably unintended effect of requiring the wearing of a fishing license is that it becomes a "badge of honor" that identifies a person as part of a special group–he or she is marked, proudly, as an angler.

The How's and Why's of Fishing Regulations

According to Dick Snyder, Chief of the Fish & Boat Commission's Division of Fisheries Management, requiring licenses also helps the agency identify its user group. "It gives us a means of getting information into their hands, the summary booklet or other material," says Snyder. "If carried through to the nth degree electronically, we could get back to those [license buyers] and survey them for their expectations." Licensing gives the Commission an important user-group database, even if culling paper copies of licenses is required.

Licenses have been required of those angling in Pennsylvania since 1922. Licenses have expanded from the basic license to include a Trout/Salmon Permit and Tourist and Lifetime Senior Resident licenses. Snyder recounts how fisheries management regulations have changed through the years, too:

Regulations may begin as proposals the public sends in, they may originate from the board of commissioners, or they may start with the Fish & Boat Commission staff, perhaps a suggestion from a field officer or an area fisheries manager who sees a need, a problem or a way that angling or resource protection can be improved.

The proposal for a regulation might be for a whole new regulation, a change to a current rule, or even a call for elimination of a regulation.

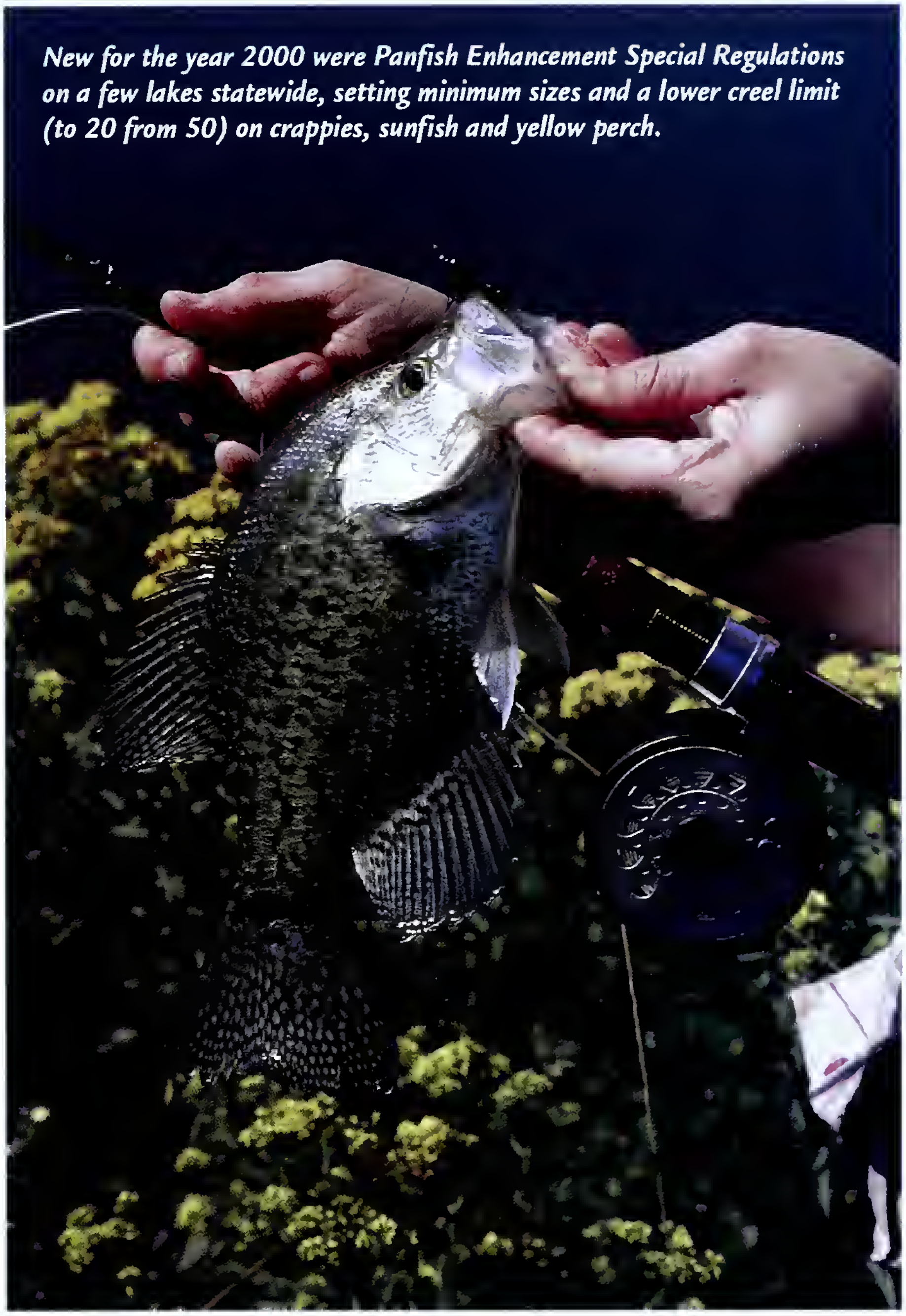
"Years and years ago, some regulations were designed and created on best judgment, with no data, but with common sense. Some of those same concepts, such as size and creel limits, have continued today and we continue to refine them. The Commission has given us the flexibility to fit regulations to unique situations statewide."

In the "old days," says Snyder, fishing regulations were set as if all habitats in the state were the same. Nowadays, fisheries can be managed through regulations, from individual waters to groups of similar habitats, developing them to their different potentials as a resource and their capability of providing angling recreation. In some places the goal could be producing larger fish, as in the Big Bass Program, requiring more restrictive rules on minimum size and creel limits than the more liberal statewide regulations.

"Primarily we use the more restrictive limits where we see that angler harvest is the reason fish population abundance is held down or the older and bigger fish are always cropped off," says Snyder. In general, in recent years the public has shown it wants more conservative regulations, with increased emphasis on fishing for fun instead of creel harvest. The limits are designed to make the harvest that is permitted more equitable to anglers as a group, as if all users are of equal skill and talent, he says.

The recent change from the longstanding creel limit of eight trout to five should not make a biological difference in natural trout fisheries, says Snyder, but "I'm glad the decision went that way. Five is a reasonable number as a creel limit." The change was more a "value call" by the Commission, he says, reflecting changing social perceptions on what constitutes a good day of fish-catching and what is appropriate and acceptable to kill and take home daily. "Those anglers who caught their limit before still will, but the others probably won't do much better, unless their angling skills improve," Snyder says.

Through its inventories of waterways, the fisheries management staff often notices the need for a regulation. With its surveys, area fisheries managers can determine a stream or lake's fishery health, including the densities of fish populations, growth rates, and age and size structure, and they can compare that information with other waters. Through regulations, they can increase fish numbers or the abundance of a highly desirable size fish. The staff recommendations are done in concert with the result of angler opinion surveys.



New for the year 2000 were Panfish Enhancement Special Regulations on a few lakes statewide, setting minimum sizes and a lower creel limit (to 20 from 50) on crappies, sunfish and yellow perch.

"We're inclined to give up some harvest if we can have better fish and a higher catch rate," says Snyder. In the 1980s, the Commission began implementing special regulations on specific waters, such as the Delayed-Harvest, Big Bass and Conservation Lakes programs. These programs grew out of Commission staff initiatives, says Snyder. Then anglers saw more fishing success and said, "We want more." However, some aquatic ecosystems won't handle too much fish population stockpiling, he adds, because natural mortality eventually takes "saved" fish.

For social reasons, the Commission is trying to keep the rules as broad as possible in terms of tackle–artificial-lures-only equipment–allowed in special regulation programs.

The How's and Why's of Fishing Regulations

Tackle restrictions excluding bait angling are designed to minimize the handling and hooking loss of fish, as in the Delayed-Harvest areas. The tackle restrictions there are designed to handle the intense fishing pressure and high catch rate and "recycle" a lot of trout to be caught again.

Sometimes regulations reflect concerns of landowners who allow fishing on their property. Some may balk at a flies-only or lures-only restriction on their water areas, as the Commission tries to maximize fishing and fishery resource potential there. The response in recent years has been the establishment of novel programs like All-Tackle Trophy Trout and All-Tackle Selective Harvest. With these and the associated length limits, says Snyder, the Commission has a better management tool to give anglers the benefit of catching more and bigger fish.

New for the year 2000 were Panfish Enhancement Special Regulations on a few select lakes statewide, setting minimum sizes and a lower creel limit (to 20 from 50) on crappies, sunfish and yellow perch. "Our thinking," says Snyder, "was that panfish are no different from the gamefish species, where we have for many years used a length limit to manage fisheries. We've seen that creel limits are relatively ineffective in regulating harvest, unless they are set very low."

Snyder explains that panfish often go through population swings, and the 50-panfish limit does not give the Commission much means to adjust harvest. A length limit, as in the Panfish Enhancement program, applies to each fish as it is caught, providing a management technique that can make better distribution of fish size. The new regulation does require anglers to be able to tell a bluegill and pumpkinseed from a crappie from a yellow perch. The reduced creel limit accompanying the Panfish Enhancement regulations was another "value call" of the Commission, says Snyder, because of the perception that a 50-fish kill was too large, trivializing the resource.

Concerning the new statewide regulations on bass fishing, calling for year-round fishing, changes in the creel/length limit throughout the year and setting a no-harvest period during the spawning season, Snyder says the changes came out of interest expressed by various angling groups and from fisheries staff. "We recognized confusion among anglers on what the closed season on bass meant," says Snyder, "and we looked at that part of our obligation that, besides resource conservation, provides for recreation. We realize we could go further in advocating bass fishing in the spring without jeopardizing fish stocks and clarify the issue of a closed season for anglers." And under the new regulations permitting catch-and-release spring bass fishing, it is unlawful for an angler to cast repeatedly into a clearly visible spawning nest in an effort to catch a bass.

Some regulations are a response to cross-jurisdiction management of fisheries, where lakes or rivers are on Pennsylvania's borders. The Delaware River, for example, has migratory species that travel into the Atlantic Ocean and may even lend an international flavor to fisheries management, says Snyder. Managing Lake Erie's fish stocks and setting harvest regulations is another "special case," requiring cooperation among New York, Pennsylvania, Ohio, Michigan and the province of Ontario, Canada. Pymatuning and Conowingo reservoirs, which cross state boundaries, also have fishing regulations that differ from the regular Commonwealth inland waters rules, as a response to shared management.

A case of same objective, different regulations can be seen in the shad fishing rules on the Susquehanna and Lehigh river systems, where shad runs are being reestablished. No shad harvest is allowed on the Susquehanna and its tributary, the Juniata, as part of the total restoration plan, says Snyder. "A zero creel limit reflects the seriousness of the shad restoration effort, and until we reach a certain ceiling in population, no harvest will be permitted." On the Lehigh, a tributary to the Delaware, where shad fishing is a historic spring rite, "we wrestled with no harvest or a limited harvest," says Snyder. The Lehigh is a small river system, and a one-shad limit is allowed, primarily to increase publicity and interest in shad fishing there. "If we can get some feedback on people catching shad in the Lehigh, that would be really outstanding," says Snyder.

"We always challenge our staff that if a regulation isn't working, for reasons we can identify, let's change it," says Snyder. Regulations are done with the idea that "let's try something, but let's give it a long enough trial to allow nature to have its ups and downs and average out," he says. When "Fish-for-Fun" areas were reevaluated in the early 1980s, some of them were on marginal trout streams that were mixed in with the top spring creeks. Regulation revisions moved the marginal waters into programs that are more suited to them. Similarly, the Commission broke with tradition when it allowed March fishing in trout-stocked lakes, that change coming about through a review of why these waters were closed. No regulation is etched in stone, says Snyder, and anglers should look for them to continue to evolve.

Bowersox echoes that expectation: "Fishing used to be such a simple sport, but as we learn more about our resources, and the public wants us to do a better job managing them, we have to delve into things more complex than in the good old days. Nowadays it's a greater challenge to accommodate everyone who wants to come out and enjoy our waterways and to provide good fishing for years to come."

In the end, it doesn't matter how many regulations are on the books, says Bowersox. The influence of these fishing rules is only as good as the enforcement of them and, especially, the compliance and acceptance that the public adds to the conservation and recreation effort.

Boating's Surprising Effect on the American Economy

by Greg Proteau

Even though most outdoor enthusiasts see recreational pleasure boats as a means to their on-water adventures, most people are surprised to learn just how big the industry is that serves them. The boating industry is more than boats. It is jobs, salaries, renovated and improved waterfronts, taxes collected and thousands of marine-related businesses and services. As a national industry, boating helps fuel the economy.

Boats and related products alone amount to more than $23 billion in total annual retail sales. And with 78 million boaters, almost one-third of the nation's population, boating is one of the most popular recreational activities in the United States.

Even though the boating industry is huge, there are thousands of boating companies in every state, and many of them are small businesses. There are close to 30,000 businesses that make up the marine industry. Retailers account for 14,000 companies in their own right, and there are over 11,000 marinas throughout the United States that provide a home for the nation's fleet. There are almost 1,000 production boat manufacturers in the U.S. that, in many cases, build craft which are the envy of the world in quality, workmanship and seaworthiness.

Boating provides direct jobs for 550,000 workers nationwide, from high school students on their first jobs as dock hands to boat-building entrepreneurs, marine dealers and assembly line workers, who re-circulate their marine-generated salaries throughout the economy. Marine consumers pay nearly $400 million annually in taxes and fees.

A massive infrastructure supports this popular pastime. For example, marinas are often responsible for revitalizing urban and non-urban areas, pumping new spending into local businesses and sprucing up decaying waterfronts. Carpenters, engineers, masons and many other "non-marine" workers build these marinas, extending the economic effect beyond the boating industry itself.

The "ripple effect" of every industry is in large part a good indication of that industry's true economic value to society. The sport fishing industry, for example, is closely tied to the boating industry, and helps support tourism-based economies. A Texas A&M study found that fishing on Lake Fork, Texas, brought $27 million into the community for items such as lodging, food, gasoline and marina fees. Every year the U.S. Fish & Wildlife service conducts a study of fishing, hunting and wildlife-associated recreation. The most recent study found that fishermen spent over $6 billion in 1996. Over $414 million was spent in California by boat owning fishermen on launching, mooring, storage, maintenance, insurance, pump-out fees and fuel in 1996. Overall, the effect of sport fishing in 1996 was over $108 billion.

In addition, the boating industry requires materials like fiberglass, aluminum, steel and wood, all supplied from outside the industry itself. Detroit automobile makers manufacture many of the engine blocks used in today's inboard and stern drive boats. Other materials required by the industry include vinyls, carpeting, instrumentation, tires and wiring, to name a few.

There are some 200 boating publications that serve a public seeking boating information, and about 2,000 lending institutions across the country that have established departments specializing in making boat loans. In fact, boating is increasingly the "second home" of the American middle class. Even the federal government recognizes this fact. If a boat can accommodate a galley, a head and a place to sleep, it can qualify for the second-home mortgage tax deduction, according to the Tax Reform Act.

All in all, there are about 17 million boats in the U.S. today. Last season, new products joining the fleet included some 600,000 boats, 170,000 trailers, 332,000 outboard motors and 120,000 stern drive and inboard motors. That means measurable fun for a nation that embraces on-water recreation, and it represents a positive economic effect across the U.S.

Pennsylvania Connection

Pennsylvania ranks 11th in the nation among states with the highest number of registered boats. The number of boats registered in Pennsylvania reached a record high in 1999 with a total of 351,779. According to the National Marine Manufacturers Association and *Boat and Motor Dealer Magazine*, Pennsylvania has 326 boat dealers, nine boat builders, 81 marinas and 74 other industries associated directly with boating.

DO'S and DON'TS for Crowded Launch Ramps

About this time of year, many boat ramps are crowded.

Suppose every time you launched your boat, no one tied up the dock, and each time you retrieved your boat, the ramp was clear and you waited only momentarily, if at all, for your turn. Enjoying this situation isn't impossible. It just takes a little application of the Golden Rule and some launch ramp smarts when accesses are crowded. Here are six ideas we can use to make launching and retrieving tolerable for everyone.

- Get to know your favorite accesses so you can plan your launching and retrieving for maximum efficiency. Boaters tie up launch ramps because they don't realize that many access sites have specially built areas for launch preparation and for tie-down after retrieval. These places are called rigging and derigging areas. If we used these places, more boaters could launch and retrieve, and a long line at the ramp itself could be shortened.
- Before you launch your boat at an unfamiliar access, look the place over and decide how you're going to launch and retrieve for maximum speed and safety. Is there a dock at which you can get your gear ready immediately after launching and where you can secure your equipment before retrieving out of the way of those who are launching and retrieving? Will the wind or current make maneuvering your rig for launching and retrieving difficult? If you launch on the Delaware River, will a tide change make you alter your launching and retrieval scheme?
- If a launch site doesn't have rigging and derigging areas, prepare for launching in a parking space. As soon as you retrieve your boat and get it on the trailer, attach the bow hook and make your way slowly to the parking area. There, away from others trying to launch and retrieve their boats, work with your equipment and get ready to leave.

Remember that the ramp itself is only for launching and retrieving, not for preparing your boat and gear.

- Before you call it a day and return to the ramp to retrieve your boat, put your tackle away, prepare mooring lines and get everything ready that's coming out of the boat for storage in your tow vehicle. Don't perform these tasks on the ramp. You won't tie up the ramp this way, and you'll get home faster. In addition, when you launch the next time, organizing your gear this way can help you get under way faster.
- If ramps have docks, where you can wait for friends or complete your boating preparations, use them instead of waiting on the launch ramp. You can also beach your boat on smooth shorelines at the launch site either to wait for friends to board or to wait your turn to retrieve your boat.
- Make a written checklist for launching and retrieving. You increase efficiency by getting your gear ready for use and by storing items quickly. A routine governed by a checklist increases your efficiency and lets you spend the least amount of time at the ramp.

A checklist also reminds you to perform necessary tasks like putting the plug in and removing the transom tie-down straps before launch.

Applying these ideas before you launch can give you and everyone else at the ramp more time on the water. Crowded launch sites don't always have to mean long waits and frayed nerves. It's up to us.

CONSERVE 2000

PROTECT PENNSYLVANIA'S WATERS

This article is the fifth in a series of articles on the major topics of concern in the Commission's theme, "Conserve 2000." This article focuses on why fish become threatened and endangered.

PA's Threatened and Endangered Fishes

by Walt Dietz

In today's world of environmental consciousness, many Americans are aware of what the words "endangered" and "threatened" mean. You may already know that an endangered species may soon become extinct or extirpated through all or a portion of its range. You might also know that a threatened species may soon become endangered. These two words conjure up thoughts of unique birds like the California condor, fuzzy mammals like the giant panda, or rare predators like the Bengal tiger. These animals are large or colorful. They get a lot of publicity and are known worldwide. It's easy for us to relate to such creatures. But there are many more threatened and endangered animals that go unnoticed by most of us.

PA's Threatened and Endangered Fishes

These unnoticed animals aren't flashy, cute or furry. They don't live in exotic jungles or far-off mountain ranges. And you probably won't see one featured in a news magazine or television special. One hint is that they live closer to you than you might think. If your thoughts have turned to cold-blooded (ectothermic) critters like fish, then you are on the right track. A threatened or endangered fish might seem small and insignificant. But you might be surprised to learn just how important and interesting they really are. Most are important as indicators of water quality. Some were once important as a food resource or provided great sportfish recreation. Some have unique and fascinating life histories. Others are just plain neat to look at because of their colors. Certainly you will agree that they add to the biodiversity of all living creatures.

Making the list

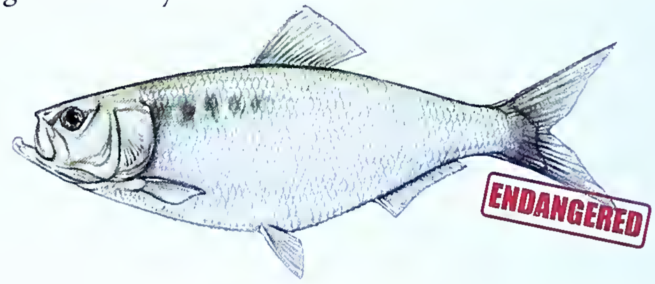
Of all the vertebrates in the world, fish probably rank first with the most threatened and endangered members. Nationwide, 116 fish species are listed. A fish that makes the federal list is in serious peril throughout its entire range. Our state has 43 fish listed–28 are threatened and 15 are endangered. Only one fish on the state list also appears on the federal list. It is the shortnose sturgeon. In every case there are far more fish on these lists than mammals, birds, reptiles or amphibians. Unfortunately, it doesn't end there. That's because there is also a list of 11 candidate species. Candidate species have an uncertain future. They aren't quite troubled enough to make the threatened and endangered list. But biologists and resource agency personnel are watching them closely.

All these numbers add up to a lot of fish. This fact is especially true when you consider that threatened, endangered and candidate fish make up 34 percent of the 159 species fish that live in our state's waters. This statistic is alarming. And yet, these fish seem to get the least amount of the public's attention.

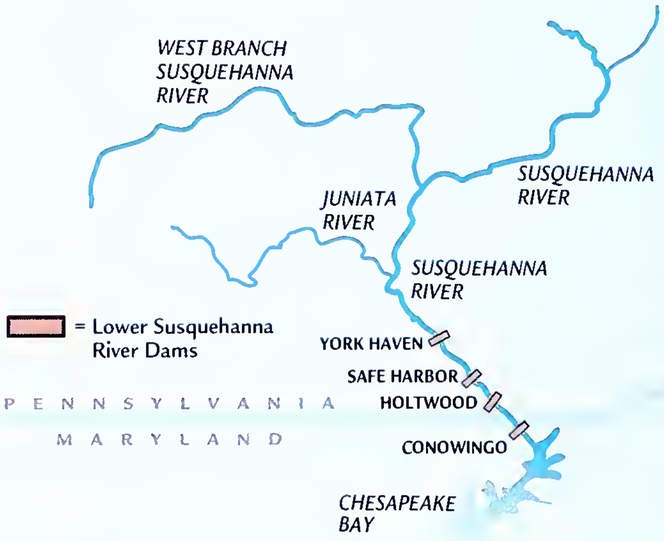
There are many reasons why a fish might become threatened or endangered. Habitat loss, habitat alteration, water pollution, overfishing, disease, predation and competition with introduced species are all factors. The main factors are almost always related to humans. Some type of habitat loss or alteration and water pollution can be linked to just about every listed fish. To make things even worse, many of these fish have special needs or unique life cycle requirements. Most of them need very clean water and unsilted gravel bottoms to spawn in, like the darters. Some take many years to reach reproductive age, like the sturgeon. Others must migrate long distances to spawn, like the shad. Couple the human-caused maladies with the special needs of these fish and you have a sure recipe for making the list.

Obstacles to migration

One way that humans have altered fish habitat is through dam construction. Dams are built for many reasons and they can be quite useful to us. They provide hydroelectricity, flood control and recreation. But they also have a detrimental effect on migratory fish. An example is the endangered hickory shad.



The hickory shad is an anadromous fish. It lives in the ocean, enters estuaries and then migrates into fresh water to spawn. It currently migrates up the Delaware in small numbers. It also once migrated up the Susquehanna River, but hydroelectric dams have impeded its migration since the



Threatened, endangered and candidate fish make up 34 percent of the 159 fish species that live in Pennsylvania waters.

graphics and illustration-Ted Walke

Fish lift at Safe Harbor Dam.

late 1800s. There is promise for the hickory shad in this river. It's finding its way back to spawning grounds, along with the American shad, thanks to fish lifts. This is good news for anglers because the hickory shad is a great sportfish. It's a strong fighter and can occasionally reach sizes up to 24 inches. If you catch a hickory shad, you must remember to release it immediately. It's illegal to keep or harm endangered or threatened fish.

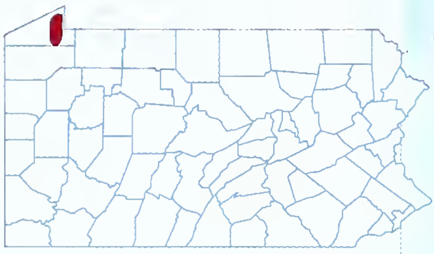
Deadly waters

The majority of our threatened, endangered and candidate fish occur in the western part of the state. There are several reasons for this phenomenon. One reason is that the Ohio River, Allegheny River and Lake Erie tributaries were heavily polluted in past years. Industrial discharges around cities, sewage discharges, oil spills, acid mine drainage and siltation had strong effects on fish in these rivers and streams. Some of the fish affected were the skipjack herring, bigmouth buffalo, spotted gar, warmouth and cisco. All of these fish are listed as threatened or endangered.

spotted gar

ENDANGERED

A second reason is an unusual stream flow reversal that occurred in French Creek, in northwest Pennsylvania. At one time, French Creek (Erie, Crawford and Mercer counties) flowed north into the St. Lawrence River and eventually into the Atlantic. Glacial activity caused this creek to change direction and switch its flow south to the Allegheny River, which eventually empties into the Ohio River, Mississippi River and Gulf of Mexico. This turn of events left some fish populations isolated by glaciation and its resulting melting.



Now it's easy to understand how pollution or habitat change could easily destroy one of these relict fish populations. This susceptibility is why they were given a threatened or endangered status. These relict populations also include some of our most interesting and colorful fish. They include the bluebreast, longhead, Tippecanoe and spotted darters; minnows like the gravel chub; and catfish like the northern madtom.

Taking too many

One family of fishes was once so common in our state that commercial fisheries were set up just to catch them.

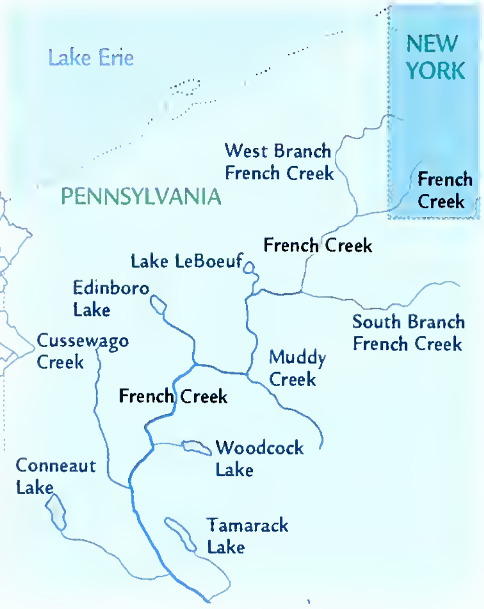
lake sturgeon

ENDANGERED

Atlantic sturgeon

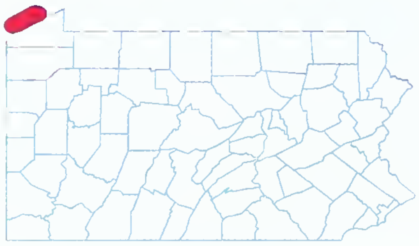
ENDANGERED

The primitive Atlantic sturgeon, shortnose sturgeon and lake sturgeon were all prized for their meat and eggs (caviar). The anadromous shortnose sturgeon and Atlantic sturgeon would travel up the Delaware in large numbers to spawn. The Atlantic sturgeon would reach huge sizes of up to 800 pounds and 14 feet long. Can you imagine hauling in a monster like that–and in fresh water to boot! The shortnose was a bit smaller, at three feet. The lake sturgeon lived in lake Erie and the western Pennsylvania rivers. The irony of these large, peaceful fish is that they feed on tiny invertebrates and small fish.



Overfishing is what caused the demise of the sturgeon in our state's waters. Water pollution and dams (on the Allegheny) were secondary factors. The sturgeon's long reproductive cycle made it even more difficult for them to compete with human effects. It takes many years for a sturgeon to reach spawning age. Fortunately, they live long lives of up to 80 years.

The three sturgeons are currently endangered. The Atlantic sturgeon may no longer reproduce in our state waters. The shortnose population is healthy and growing.



Shortnose sturgeon can be seen migrating on the lower Delaware River. The lake sturgeon can sometimes be found in Lake Erie. It is essentially gone from the Allegheny and Ohio rivers.

Helping hand

The Fish & Boat Commission works hard to protect threatened and endangered fish. The first step is to develop and maintain a list. The Commission has a special committee that recommends a fish's addition to or removal from this list. Decisions like these are not taken lightly and are based on sound research and studies. A cooperative study among the Commission, Penn State University and the Wildlife Resource Conservation Fund is one example. Records from fishery studies, museums, universities and other agencies were entered into a huge database. The database was then converted into a Geographic Information System (GIS). The GIS gave us new information on the range and rarity of certain fish. A few fish were removed from the list because they were more common than previously thought. Unfortunately, more fish were added because they were found to be very rare.

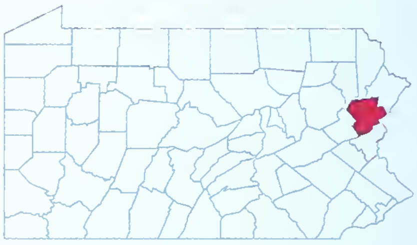
The Commission doesn't stop with just "listing" a fish. It also sets rules and regulations to protect these fish. It then enforces the regulations to prevent catching, killing or selling protected species. There are even regulations that prevent introduction of certain exotic species that might compete with rare native fish.

The Commission develops and maintains lists of threatened, endangered and candidate fish species. Decisions are based on sound research and studies.

photo-PFBC Division of Fisheries Management

Fish lists and capture regulations still might not be enough protection if there isn't a place for the fish to live. That's why the Commission plays an important role in habitat protection. Anyone who wants to build a bridge or highway, or engage in other development must first apply for a permit from the Department of Environmental Protection (DEP) or county conservation districts. More than 1,500 permits are carefully reviewed each year. The Commission provides recommendations to DEP regarding a project's effects on endangered, threatened or candidate fishes. Permit review may be the most important part of protecting threatened and endangered fish. This process doesn't cost a lot of money. It also doesn't have to stop development from occurring. It just gives regulatory agencies the chance to work with developers on avoiding crucial habitat and minimizing effects.

A perfect example of this permit process is a highway project that would have crossed Marshall's Creek in Monroe County in several locations. It is the last known habitat in Pennsylvania for two colorful but endangered minnows, the ironcolor and bridle shiners. It was thought that the ironcolor shiner was extirpated from the state, until it was found at Marshall's Creek in 1995. You might be surprised to learn that this minnow was once common in large numbers throughout southeast Pennsylvania. Habitat alteration, water pollution, siltation and introduction of nonnative fish contributed to its demise. The permit process is what protects habitat from alteration. In this case, the highway project won't be stopped. But the effects on the two endangered fish will be minimized because the review and recommendation process led to modifications that avoid stream crossings.



A bright future

The words "threatened" and "endangered" might seem to have a negative aura about them. Fortunately, it's not all doom and gloom for many of our troubled fish. Adding a species to the "list" is actually more positive than you might realize. It's much like being sent to the hospital when you don't feel well. It's really the first step toward recovery. It's about awareness that something is wrong. Awareness leads to education about what happened and how to make it better. Education is what causes change in our attitudes, which leads to action. Action on the part of agencies, developers and citizens is what will create a brighter future for our threatened and endangered fish.

Pennsylvania's Threatened and Endangered Fishes

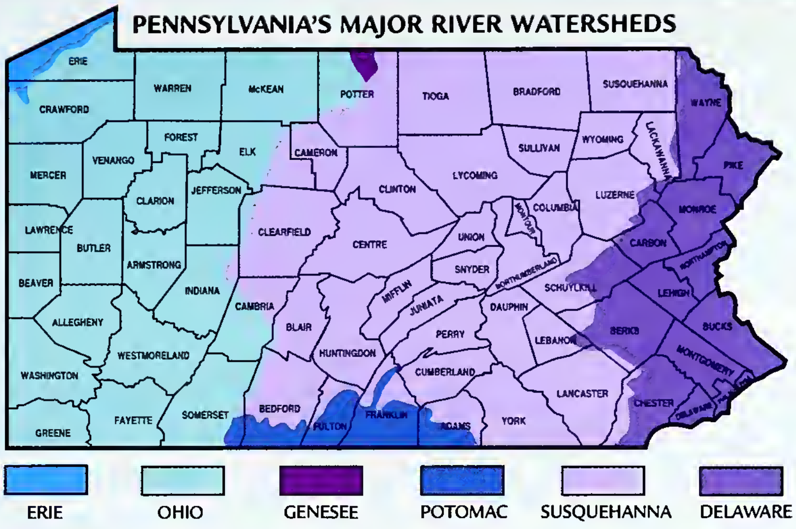
TERMS OF ENDANGERMENT

🟥 **Endangered:** Species in imminent danger of extinction or extirpation throughout its range in Pennsylvania.

🟨 **Threatened:** Species that may become endangered throughout its range in Pennsylvania.

🟦 **Extirpated:** Species that has disappeared from Pennsylvania but still exists elsewhere.

🟩 **Extinct:** Species that occurred in Pennsylvania but no longer exists across its entire range.


PENNSYLVANIA'S MAJOR RIVER WATERSHEDS

LAMPREYS

Family Petromyzontidae

Northern brook lamprey
Ichthyomyzon fossor 🟥
Erie and Ohio watersheds
Lacks scales and paired fins. Rounded, jawless mouth. Small, blunt disc teeth and dark-gray or brown coloration on the dorsal part of its body. Non-parasitic. Reaches a length of six inches.

Mountain brook lamprey
Icthyomyzon greeleyi 🟨
Ohio watershed
Well-developed disc teeth. Dorsal fin notched slightly. Sides of the body flecked with tiny dark spots. Reaches 10 inches in length.

STURGEONS

Family: Acipenseridae

Shortnose sturgeon
Acipenser brevirostrum 🟥
Delaware watershed
Smallest of Pennsylvania's sturgeons, seldom exceeding three feet. Short, blunt snout and dark-brown to black coloration on top with lighter brown to yellowish below. Scales along each side are lighter than the body color. Paired fins outlined in white. Anal fin origin is beneath the dorsal fin origin. Anal fin has 19 to 20 rays. Snout is not turned down.

Lake sturgeon
Acipenser fulvescens 🟥
Erie watershed
Reaches a length of seven feet. Olive-brown to gray coloration on the back, sides, fins and bony scales, and white below. Anal fin origin is behind the dorsal fin origin.

Atlantic sturgeon
Acipenser oxyrhynchus 🟥
Delaware watershed
Largest Pennsylvania fish, reaching a length of 12 feet. Two rows of smaller bony plates anterior to the anal fin and a long, sharply shaped snout. Upturned snout. Dark-gray to blue-black upper body. White on the front margin of the paired fins, lower tail fin lobe and spines.

GARS

Family: Lepisosteidae

Spotted Gar
Lepisosteus oculatus 🟥
Erie watershed
Long, cylindrical body with large, thick diamond-shaped scales. Long snout filled with fine sharp teeth. Olive-green back, silvery-white belly. Large round spots on the top and sides of the head and upper body. Grows to four feet long.

MOONEYES

Family Hiodontidae

Goldeye
Hiodon alosoides 🟨
Ohio watershed
Large mouth with blunt, round snout. Visible teeth on jaws and tongue. Fleshy keel on belly from pectoral fin to anal fin.

Mooneye *(not pictured on poster)*
Hiodon tergisus 🟨
Ohio watershed
Similar to goldeye, except has a deeper body. Visible teeth on jaws and tongue. Keel on belly runs from pelvic fin to anal fin. Body is more silver than goldeye.

HERRINGS

Family: Clupeidae

Hickory shad *(not pictured on poster)*
Alosa mediocris 🟥
Susquehanna and Delaware watersheds
Shorter than its cousin the American shad. Commonly 12 to 15 inches. Tip of the lower jaw and dorsal and caudal fins darker. Lower jaw extends beyond upper jaw.

Skipjack herring
Alosa chrysochloris 🟨
Ohio watershed
Looks like a hickory shad. Occurs only in western PA. Lacks spots behind gill cover. Blue-green coloration on back ends abruptly, not gradually like hickory shad and other herring. Conspicuous teeth on jaws. Other herrings and shad lack visible teeth.

TROUT AND SALMON

Family Salmonidae

Cisco, or lake herring
(not pictured on poster)
Coregonus artedi 🟥
Erie watershed
Similar in shape to herring, except has small adipose fin. Long body with round cross section. Dark-green to blue on top, silver sides.

MINNOWS

Family: Cyprinidae

Gravel chub *(not pictured on poster)*
Erimystax x-punctatus 🟥
Ohio watershed
Large eye on upper half of head. Long, slender body, flattened below. Many dark "X" marks on sides. Blue-sheened to silver-colored sides. Can reach four inches in length.

Redfin shiner
Lythrurus umbratilis 🟥
Erie and Ohio watersheds
Dark blotch at beginning of dorsal fin. Steel-blue to olive coloration. Breeding males have bright red-orange fins. Dark stripe along sides, black specks along sides.

Silver chub *(not pictured on poster)*
Macrhybopsis storeriana 🟥
Erie and Ohio watersheds
Short, rounded snout, barbel in corner of mouth. Light-olive on top, bright silver-white sides.

Bridle shiner
Notropis bifrenatus 🟥
Delaware watershed
Black spot at the base of the caudal fin. Spot usually joins brown-black stripe. Stripe runs length of sides and snout. Scales on back have a dark outline.

River shiner *(not pictured on poster)*
Notropis blennius 🟥
Ohio and Erie watersheds
Slender body. Mouth extends below eye. Has uniform dark stripe along the back. Stripe surrounds dorsal fin base. Snout is pointed.

Ghost shiner *(not pictured on poster)*
Notropis buchanani 🟥
Ohio watershed
Milky white, translucent color. Large pointed fins. Large eye and rounded snout.

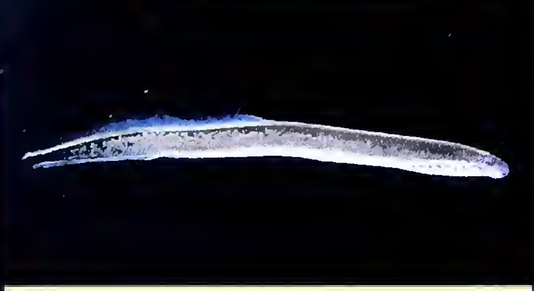
Ironcolor shiner
Notropis chalybaeus 🟥
Delaware watershed
Well-defined black stripe along sides and around snout. Inside of mouth is black. Eye is large, longer than snout. Pointed snout. Scales above lateral line are darkly outlined.

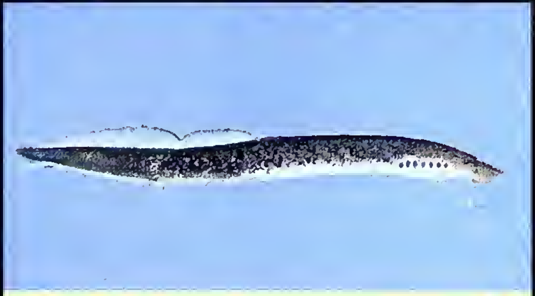
Blackchin shiner
Notropis heterodon 🟥
Ohio watershed
Short, pointed snout. Black stripe on sides and snout. Stripe often has zig-zag appearance. Black lips and chin. Lateral line usually incomplete.

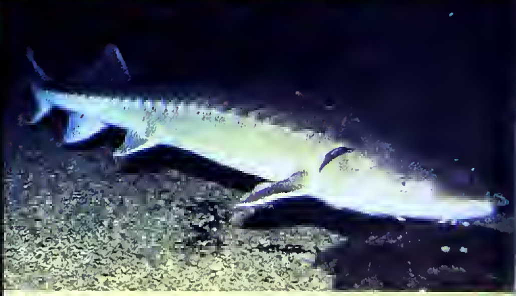
🟥 = endangered 🟨 = threatened

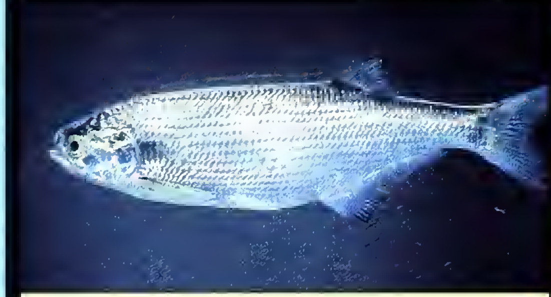
All photos on the poster by Rob Criswell except for the following, obtained through the American Fisheries Society: Northern brook lamprey, Pflieger; mountain brook lamprey, R. E. Jenkins and N. M. Burkhead; goldeye, Pflieger; redfin shiner, Roston; bigmouth shiner, Pflieger; southern redbelly dace, William N. Roston; bigmouth buffalo, Pflieger; and threespine stickleback, B. Cooke.

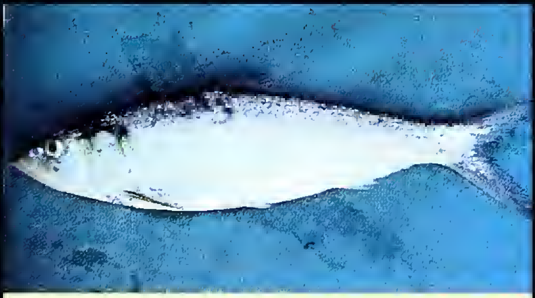
PA's Threatened and

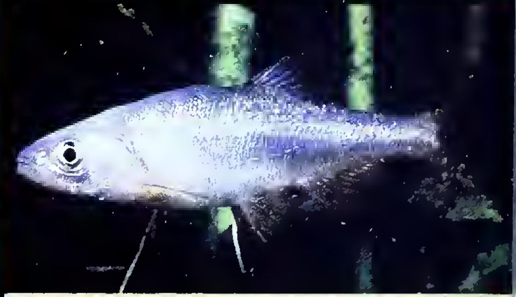

Northern brook lamprey 🟥

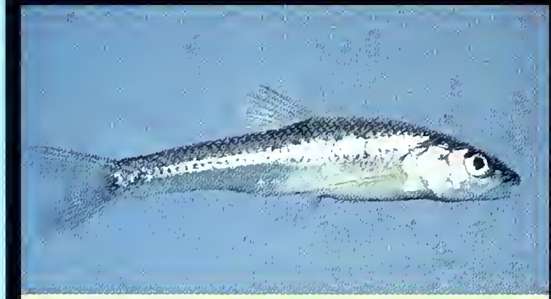

Mountain brook lamprey 🟨

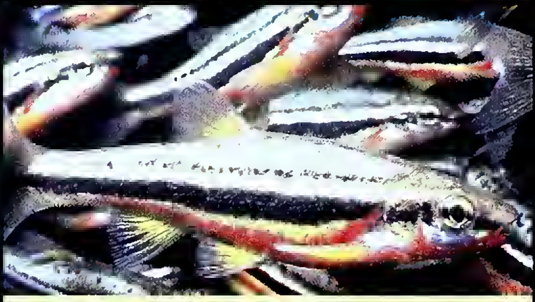

Shortnose sturgeon 🟥

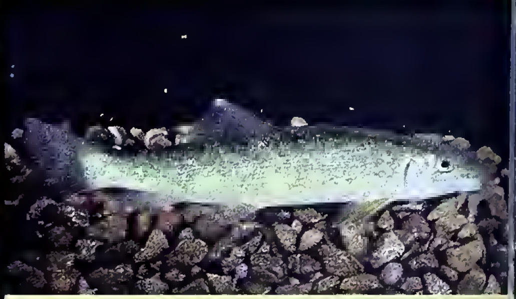

Goldeye 🟨

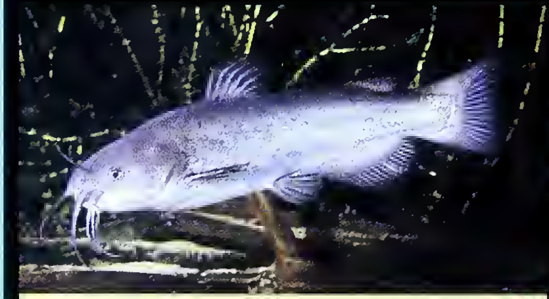

Skipjack herring 🟨

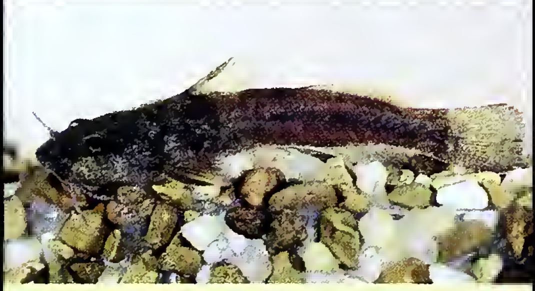

Redfin shiner 🟥

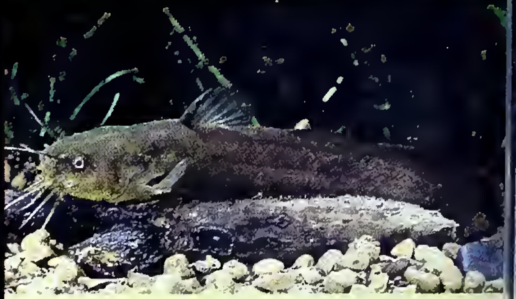

Bigmouth shiner 🟨

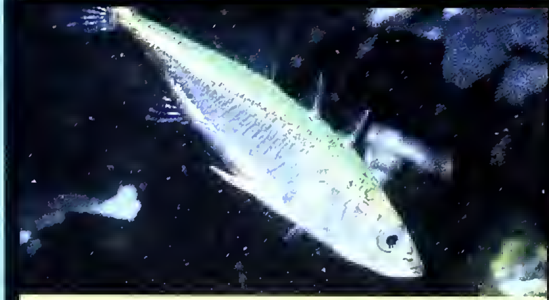

Southern redbelly dace 🟨

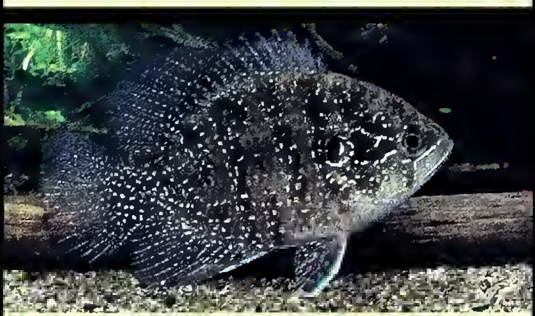

Longnose sucker 🟥

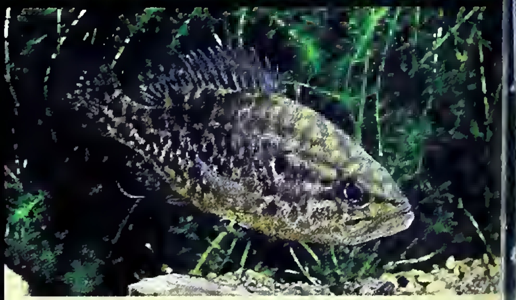

Black bullhead 🟥

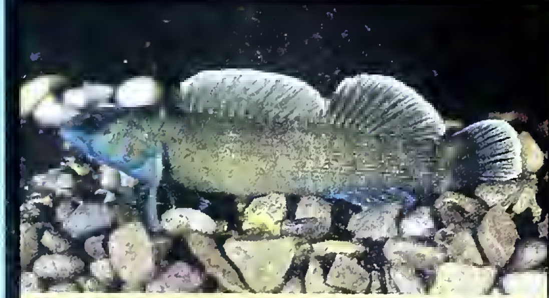

Mountain madtom 🟥

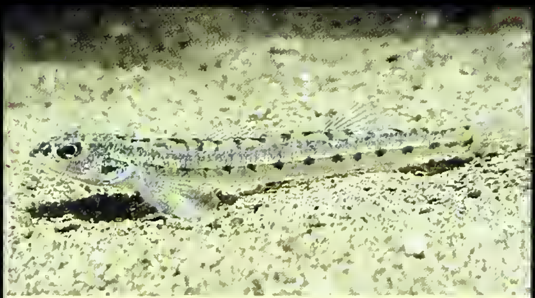

Tadpole madtom 🟥

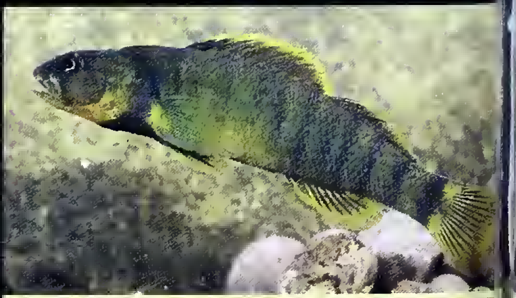

Threespine stickleback 🟥


Banded sunfish 🟥

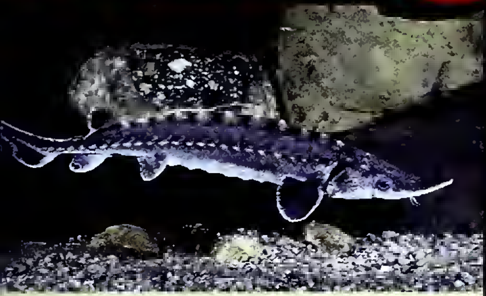

Warmouth 🟥

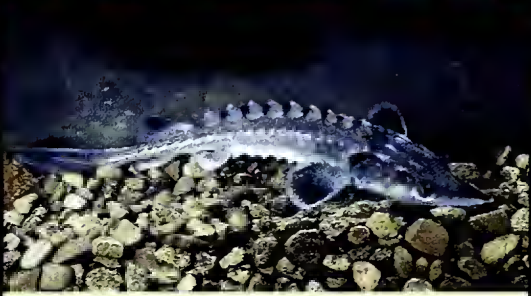

Spotted darter 🟨

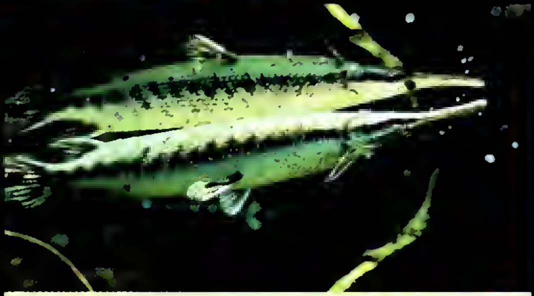

Eastern sand darter 🟥

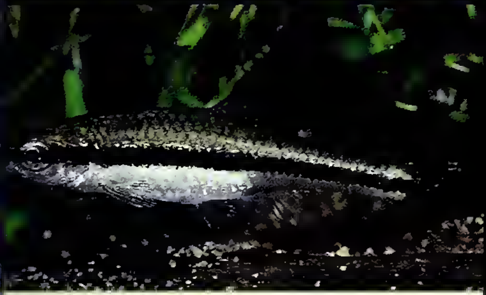

Tippecanoe darter 🟨

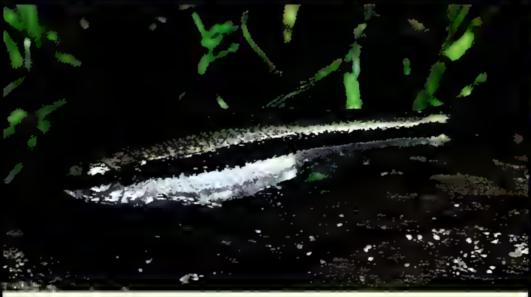
Endangered Fishes

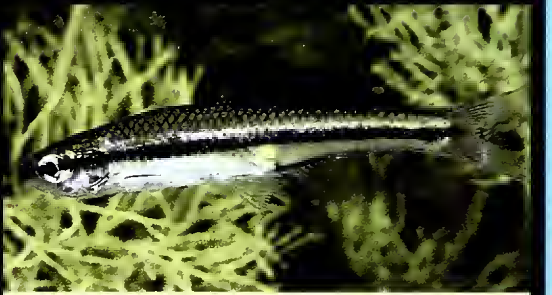

ke sturgeon 🟥

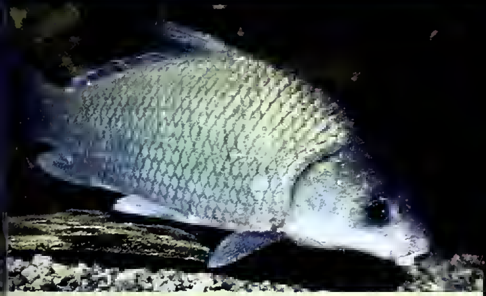

Atlantic sturgeon 🟥

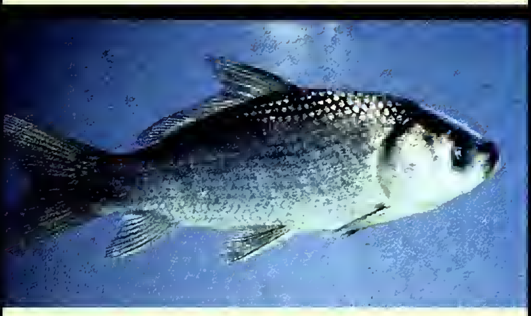

Spotted gar 🟥

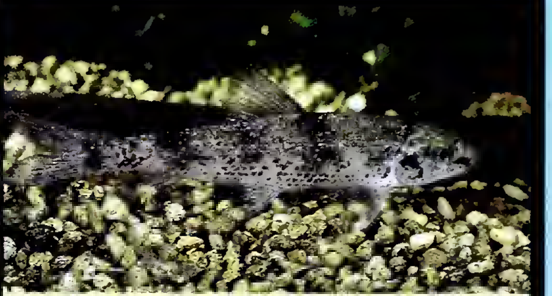

idle shiner 🟥

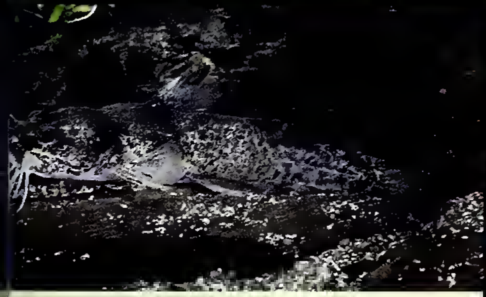

Ironcolor shiner 🟥

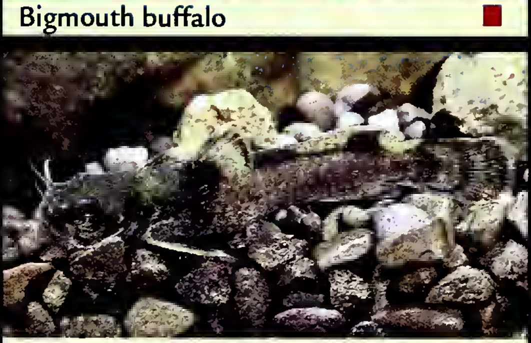

Blackchin shiner 🟥

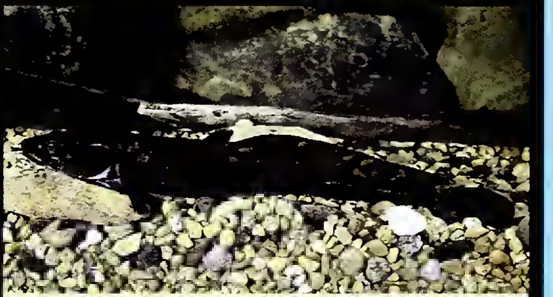

allmouth buffalo 🟧

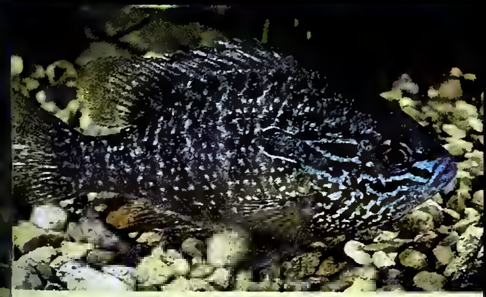

Bigmouth buffalo 🟥

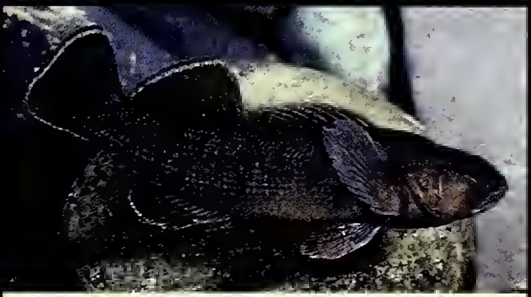

Spotted sucker 🟧

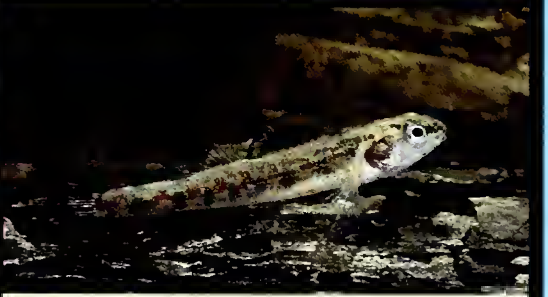

ndled madtom 🟧

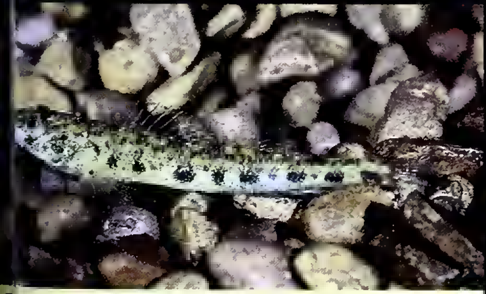

Northern madtom 🟥

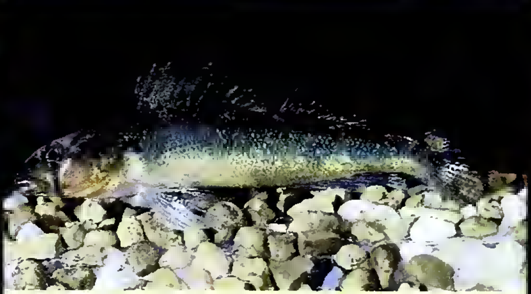

Burbot *(inland populations only)* 🟧

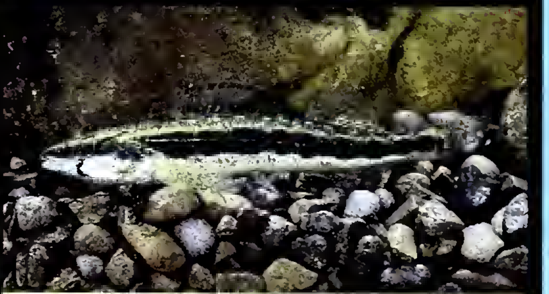

ngear sunfish 🟥


Bluebreast darter 🟧


Iowa darter 🟥


annel darter 🟧


Gilt darter 🟧


Longhead darter 🟧

🟧 = THREATENED 🟥 = ENDANGERED

Pennsylvania's Threatened and Endangered Fishes

MINNOWS *(continued)*

Bigmouth shiner
Notropis dorsalis 🟨
Erie watershed
Long snout, large mouth. Head flattened below, with eyes directed above. Light tan in coloration. Has x-shaped patterns on scales along lateral line.

Southern redbelly dace
Phoxinus erythrogaster 🟨
Ohio watershed
Two black stripes on sides. Top stripe is thin and broken. Bottom stripe is wide, thinning near the tail. Small spots on side, above top line. Lateral line incomplete. Moderately pointed snout, longer than the eye is wide.

SUCKERS
Family: Catostomidae

Longnose sucker
Catostomus catostomus 🟥
Ohio watershed
Long snout. Dark-olive or gray coloration on its dorsal side and white or cream on the ventral side. Distinguished from other suckers by a deep lower-lip notch. Reaches length of 25 inches.

Smallmouth buffalo
Ictiobus bubalus 🟨
Ohio watershed
Has a small conical head, large eyes, deep body and keeled nape. Colors vary from gray or bronze on top, black to olive-yellow on the sides and white to yellow below.

Bigmouth buffalo
Ictiobus cyprinellus 🟥
Erie watershed
Very robust body with a large, ovoid head. Terminal, sharply oblique mouth. Gray to olive-bronze above, black to olive-yellow on the sides, white to pale-yellow below. Grows to 40 inches.

Spotted sucker
Minytrema melanops 🟨
Ohio watershed
Parallel rows of dark spots on its back and sides. Also has noticeable black edge on its dorsal fin and lower lobe of the caudal fin. Reaches length of 19 inches.

CATFISHES
Family: Ictaluridae

Black bullhead
Ameiurus melas 🟥
Ohio watershed
Black to dusky gray barbels. Short, rounded anal fin. Notched edge of caudal fin. Usually lacks sawlike teeth on pectoral fin spine, unlike the brown bullhead, which has five or more.

Mountain madtom
Noturus eleutherus 🟥
Ohio watershed
Long pectoral spine with six to 10 sawlike teeth. Dark-brown bar at base of caudal fin (caudal peduncle). Dark band at base of adipose fin. Caudal fin rear edge straight. No dark spots, bands or speckles on belly, unlike northern madtom. Northern madtom has dark specks on belly.

Tadpole madtom
Noturus gyrinus 🟥
Ohio, Susquehanna
and Delaware watersheds
Chubby body. Lacks sawlike teeth on front edge of pectoral spine. Dark veinlike stripe running along sides. Caudal fin rear edge rounded. Uniform color (no spots or speckles), tan to light-brown body, light below. Fins gray or brown.

Brindled madtom
Noturus miurus 🟨
Erie and Ohio watersheds
Caudal fin rounded, with dark band along edge. Black blotch on outer and upper dorsal fin. Four vague saddle spots across back and sides.

Northern madtom
Noturus stigmosus 🟥
Erie and Ohio watersheds
Two light-colored spots in front of dorsal fin base. Brown or black band on adipose fin upper half. Two crescent-shaped bands on tail. Large pectoral spine with five to 10 sawlike teeth on front edge. Caudal fin rear edge straight or slightly rounded.

BURBOT
Family Gadidae

Burbot, *Lota lota*
[🟨–inland populations only]
Erie and Ohio watersheds
Only freshwater member of the ocean-dwelling cod family. Abundant in Lake Erie, but inland populations endangered. Long, equal-length anal and dorsal fins, rounded tail and a single barbel extending from the lower lip.

STICKLEBACKS
Family Gasterosteidae

Threespine stickleback
Gasterosteus aculeatus 🟥
Delaware watershed
Bony plates along its sides instead of scales. Three obvious and separate dorsal spines atop a compressed body. Brown or green on the upper side, which fades to silvery along the belly.

SUNFISHES
Family Centrarchidae

Banded sunfish
Enneacanthus obesus 🟥
Delaware watershed
Colorful little sunfish reaches lengths to 3 $^3/_4$ inches. Named for dark bars on sides. Rows of purple-gold spots along the sides.

Warmouth
Lepomis gulosus 🟥
Ohio watershed
Robust sunfish with a thick body and large mouth. Dark red-brown lines that radiate from its red eyes. Short, rounded pectoral fin. Wavy blue lines on fins. Grows to 12 inches.

Longear sunfish
Lepomis megalotis 🟥
Ohio, Susquehanna
and Delaware watersheds
Named for its long ear flap extending from its gill plate. Dark-red above, bright-orange below and marbled and spotted with blue. Upper jaw extends back beyond pupil. Wavy blue lines on cheek and opercula. Reaches length of nine inches.

PERCHES
Family Percidae

Bluebreast darter
Etheostoma camurum 🟨
Ohio watershed
Named for the distinguishing blue coloration on its breast. Male has bright-red spots on sides. Female has brown spots on sides. Black edge on second doral fin. Reaches length of 3 $^3/_4$ inches.

Iowa darter
Etheostoma exile 🟥
Erie and Ohio watersheds
Slender body and distinctly long caudal peduncle. Lateral line incomplete and arched. Male colorful with alternating blue and brick-red bars on sides. Reaches length of 2 $^3/_4$ inches.

Spotted darter
Etheostoma maculatum 🟨
Ohio watershed
Not as colorful as some of the other darters. Extremely compressed body and narrow, pointed snout. Male has black halos around red spots on sides. Female has black mottling on the sides. Reaches length of 3 $^1/_2$ inches.

Eastern sand darter
Etheostoma pellucida 🟥
Erie and Ohio watersheds
Well-camouflaged with 10 to 19 horizontal dark-green blotches along its sides. Lacks black bands on dorsal fins. Grows to length of 3 $^1/_4$ inches.

Tippecanoe darter
Etheostoma tippecanoe 🟨
Ohio watershed
Colorful darter never reaches length over 1 $^1/_2$ inches. Blue-black bars on sides with the darkest color at the rear. Large last bar encircles the caudal peduncle. Two spots on caudal fin base.

Channel darter
Percina copelandi 🟨
Erie and Ohio watersheds
Blunt snout and nine to 10 horizontally oblong black blotches along sides. One medial black caudal spot. Black "X" and "W" marks on sides. First dorsal fin has black along base and edge.

Gilt darter
Percina evides 🟨
Ohio watershed
Wide, dusky green bars on sides, yellow to bright-orange underside. First dorsal fin has orange band. Grows to length of 3 $^3/_4$ inches.

Longhead darter
Percina macrocephala 🟨
Ohio watershed
Named for its long snout. Distinct sickle-shaped "teardrop" curves down from eye to underside of head. Dark bar below the medial black caudal spot. One of PA's larger darters, reaching a length of 4 $^3/_4$ inches.

Wildlife Forever State-Fish Art Contest Rules & Regulations

How to Enter

Completed portfolios must be postmarked by March 31 of each year. Portfolios must include:

- A completed entry form.
- Artwork of participant's state fish.
- 1-page composition about participant's state fish, its habitat, or efforts to conserve it.
- Entry forms must be completed, signed, and glued to the back of the original artwork.

Completed entries should be mailed to:

Wildlife Forever, State-Fish Art Contest, 10365 West 70th Street, Eden Prairie, MN 55344

PA's Official State Fish
Brook Trout

Rules & Regulations

- The State-Fish Art Contest is open to children in grades four through twelve attending public, private, or home-schools in the United States. Only one entry per child will be accepted.
- Portfolios will be judged on the quality of the artwork.
- The artwork must call attention to the official fish of his or her home state. If the home state has two state fish, then the contestant may design either fish. If the home state does not have an official fish, that state's fisheries department has selected an alternative fish species. The fish **must** be depicted in its natural underwater habitat. Information about each state fish is available on the internet at http://www.statefishart.com or on America Online (Keyword: fishart).
- All artwork must be the contestant's original, hand-done creation. **Photographs and computer-generated artwork** will not **be accepted.**
- All artwork must be 9" x 12" and *horizontal,* without a mat, frame, cover sheet, or border. Art techniques may include scratch-board, pointillism, chalk, charcoal, dry brush, watercolor, crosshatch, lead, collage, linoleum printing, or crayon. (Please note: if contestants use chalk, charcoal, or lead they should seal it with an adhesive).
- All artwork must not exceed ¼ inch in total thickness.
- No lettering, signatures, or initials may appear on the front of the artwork. Any artwork with such identifying characteristics will be disqualified and eliminated from the competition.
- Completed portfolios **must** include a typed composition or theme paper not to exceed one page in length. Compositions should be related specifically to the characteristics of the state fish, its habitat, behavior, or efforts to conserve it. The composition must include the student's name and address.

Prizes

- All contestants will receive a certificate of participation.
- Final judging will take place on **Earth Day** of each year. Winners will be announced the following week.
- Three winners from each state will be selected, one winner per grade group (4-6th, 7-9th, 10-12th) for a total of 150 winners — 50 states x 3 winners = 150.
- All winning designs will be displayed at the Mall of America in Minneapolis, Minnesota at the Wildlife Forever State-Fish Art Expo in June.
- All winning designs will be presented online at http://www.statefishart.com and on America Online (Keyword: fishart) for one year.

The Fine Print

- The State-Fish Art Contest is not open to the immediate relatives of Wildlife Forever employees or participating sponsors.
- It is the contestant's responsibility to inform Wildlife Forever of any change of address.
- Contestants living in Washington D.C. may use either the Maryland or Virginia state fish in their portfolios.

Wildlife Forever:

- Has the right to use the name of any State-Fish Art contestant without compensation.
- Retains ownership of all artwork entered in the contest. In order to promote the Wildlife Forever State-Fish Art Contest, products such as posters, prints, T-shirts, etc. may be produced from winning artwork. Any monies realized from the sale or licensing of the artwork will be used to support the contest, wildlife conservation, and education initiatives. The winning artists must provide an autograph without charge to Wildlife Forever.
- Retains all winning entries until June 1of the following year and will return the winning entries to the students in June upon request.
- Will return all non-winning entries upon request after August 31 if the student provides a self-addressed 10x13-inch envelope and a $10 processing fee (a check, not cash, made out to "Wildlife Forever").
- Reserves the right to destroy unclaimed entries one year after the contest.
- Will not insure entries it receives or be responsible for loss or damage of the entries.

Wildlife Forever State-Fish Art Contest

2000 State-Fish Art Contest

Three budding artists from the Keystone State have been named winners in the national Wildlife Forever State-Fish Art Contest. The three artists were picked as state champions in their respective age classes for their depiction of brook trout, Pennsylvania's official state fish. In addition, each of Pennsylvania's winning artists also won awards in the "Best of Show" competition.

John Parisi of Philadelphia was named grades 4-6 winner for Pennsylvania. John's artwork was also selected as the national "Best of Show" for his age category.

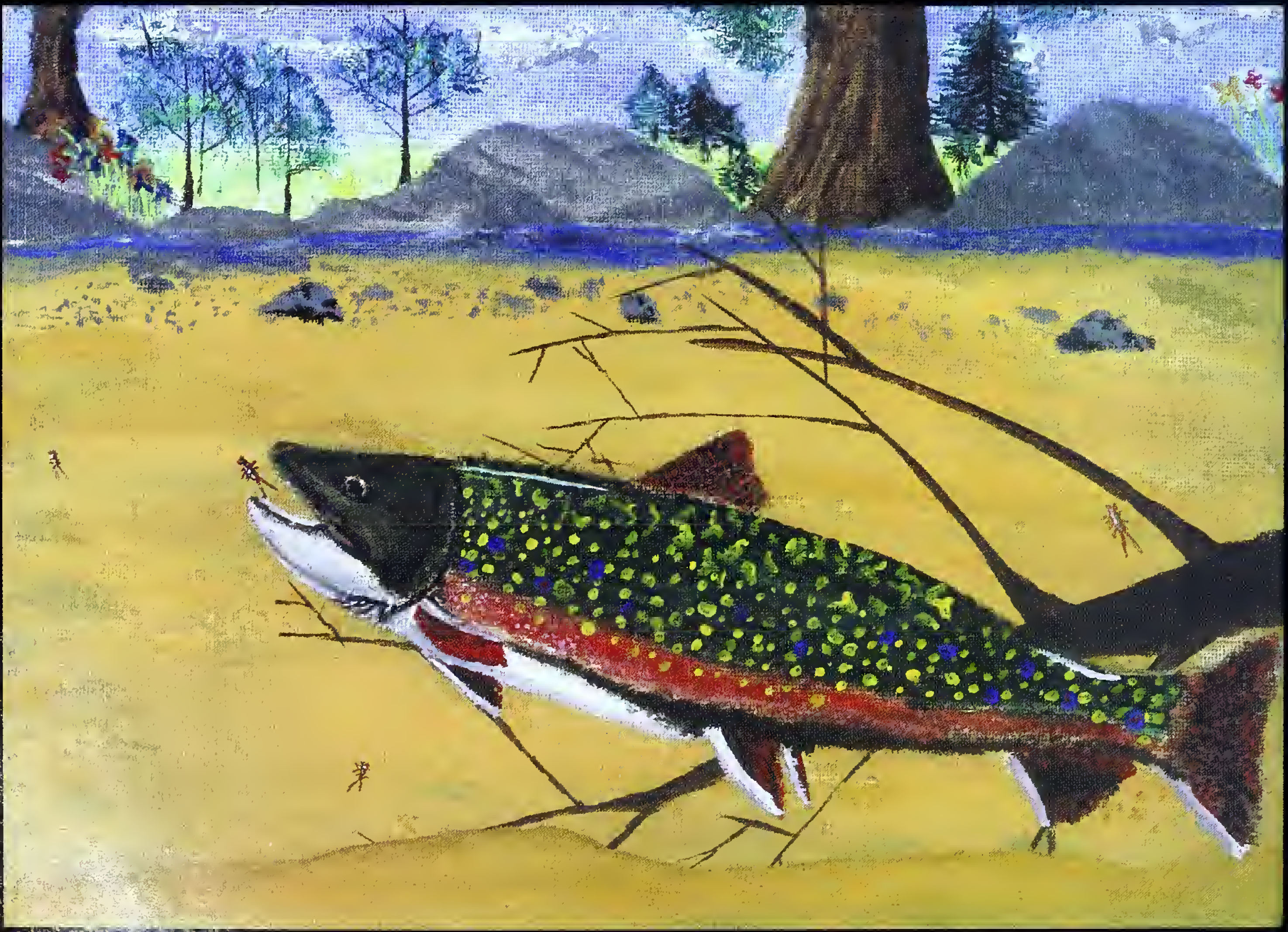
Josh Joint of Erie took top state honors in the grades 7-9 category and finished second in the nation for his age group.

Summer Rayne Oakes of Olyphant was selected as Pennsylvania champion for grades 10-12. Her illustration won third place honors at the national level.

The Pennsylvania Fish & Boat Commission is a partner agency in the annual contest, which is conducted by Wildlife Forever. Pennsylvania's 263 entries were the most from any one state.

Each Pennsylvania winner will receive a Year 2000 Pennsylvania Trout/Salmon Stamp print and patch from the Commission. The winning artists will have their drawings featured in *Pennsylvania Angler & Boater* magazine, the Keystone State's official fishing and boating magazine.

In addition, the top artwork from Pennsylvania was displayed along with other victors from across the nation. All 150 winning pieces were featured in a special Wildlife Forever Expo at the Mall of America in Bloomington, Minnesota. Winners from other states can be seen on the internet by visiting www.statefishart.com or keyword: **fishart** on America Online.



Winner: John Parisi, grades 4 - 6

Winner: Josh Joint, grades 7 - 9

Winner: Summer Rayne Oakes, grades 10 - 12

Wildlife Forever State-Fish Art Contest Entry Form

Important for teachers: If part of a classroom project, please fill out teacher and school information before duplicating and distributing to students. Duplicate and glue to back of artwork.

Entry Deadline: Postmarked by March 31. Addressed to:
Wildlife Forever, State-Fish Art Contest, 10365 West 70th Street, Eden Prairie, MN 55344

Grade *Check one*	☐ 4th	☐ 5th	☐ 6th	☐ 7th	☐ 8th	☐ 9th	☐ 10th	☐ 11th	☐ 12th
	Group I			Group II			Group III		

Please Print or Type

Contestant ______________________________
Last Name First Name Birthdate

Home Address ______________________________
Street or P.O. Box

____
City State Zip

Telephone ( ) ______________ ( ) ______________
Home Parent Daytime

Art Entry Title ______________________________

Composition Title ______________________________

Fish Species ______________________________

Medium Used ______________________________

Contestant's Teacher ______________________________ ( ) ________
Last Name First Name School Phone

School Address ______________________________
School Name (Full)

____
Street or P.O. Box

____
City State Zip

I hereby certify that this is my original work and is not a copy of published photographs, magazines, book illustrations, or other materials protected by copyright laws. I understand that Wildlife Forever and other sponsors are not responsible for loss or damage to my artwork and/or composition. I grant exclusive right to Wildlife Forever and its designees to utilize my artwork and/or composition for reproduction and promotional purposes, and to display my art; also, I agree that my artwork and/or composition may be used, altered, or published as they see fit without compensation to me.

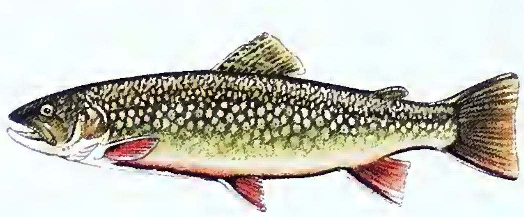
Signature of Student ______________________________
Date

Signature of Parent or Guardian ______________________________
Date

Entry questions should be directed to StFishArt@aol.com or by calling 877-FISHART. Artwork must be 9 x 12" HORIZONTAL; no more than ¼" thick; do not mat or frame; do not have lettering or borders on the front.

CONSERVE 2000

PA's Official State Fish
Brook Trout



✂ *Cut along dotted line and mail today! Feel free to photocopy this form if you don't wish to cut your magazine.*

Products and Publications

Guide to Public Fishing Waters and Boating Access

This 96-page book, 5 $^1/_2$ x 8 $^1/_2$, lists by county the locations of Pennsylvania's public accesses with information on each access's services. Also listed are brief driving directions to each access. The book also lists Pennsylvania public fishing waters by county, including miles for flowing waters and acreage for impoundments and lakes, species available and nearest towns.

96 pages!

161 pages!

Pennsylvania Amphibians & Reptiles

This 161-page, 5 $^1/_2$ x 8 $^1/_2$, full-color book lists Pennsylvania's salamanders, frogs, toads, turtles, lizards and snakes. Each animal's account includes details on general characteristics, identification, range, habitat, reproduction and food. Range maps and full-color illustrations and photographs help anyone identify each species.

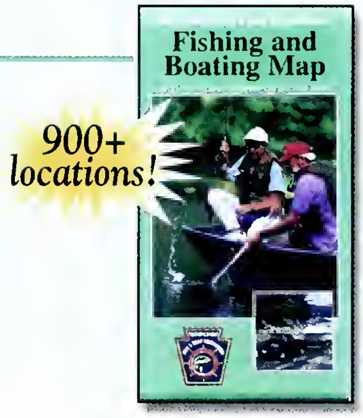
67+ species!

Endangered and Threatened Species of Pennsylvania

This book is 80 full-color pages and measures 8 $^1/_2$ x 11. The book includes details on Pennsylvania's endangered and threatened invertebrates, birds and mammals, fish, reptiles, amphibians and plants. The book was produced as a cooperative effort among the Fish & Boat Commission, Game Commission, DCNR Bureau of Forestry, and the Wild Resource Conservation Fund.

PFBC Fishing & Boating Map

The full-color folded map measures 37 inches x 22 $^3/_4$ inches flat. With the official Transportation Map, the map marks the locations of more than 900 fishing and boating accesses, lake and impoundment special-regulation areas, flowing water special-regulation areas, fish culture stations, universally accessible areas, Commission offices and pumpout stations.



900+ locations!

Products and Publications

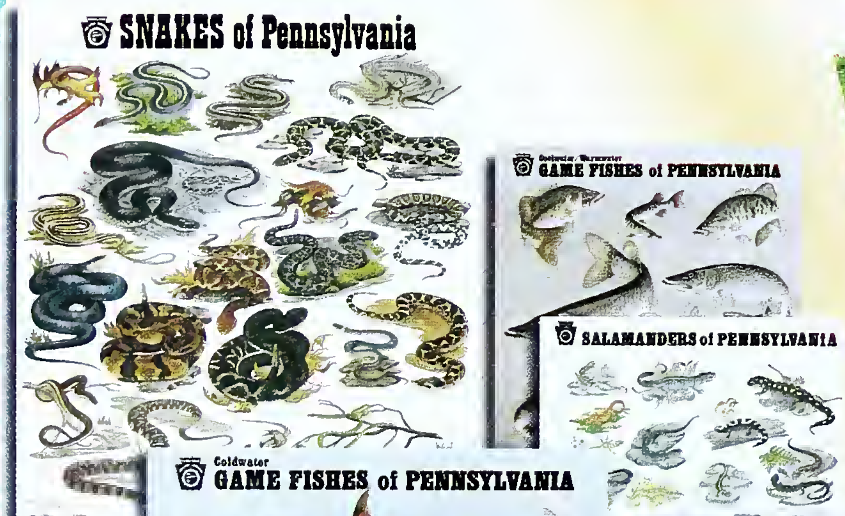
Commemorative Patches

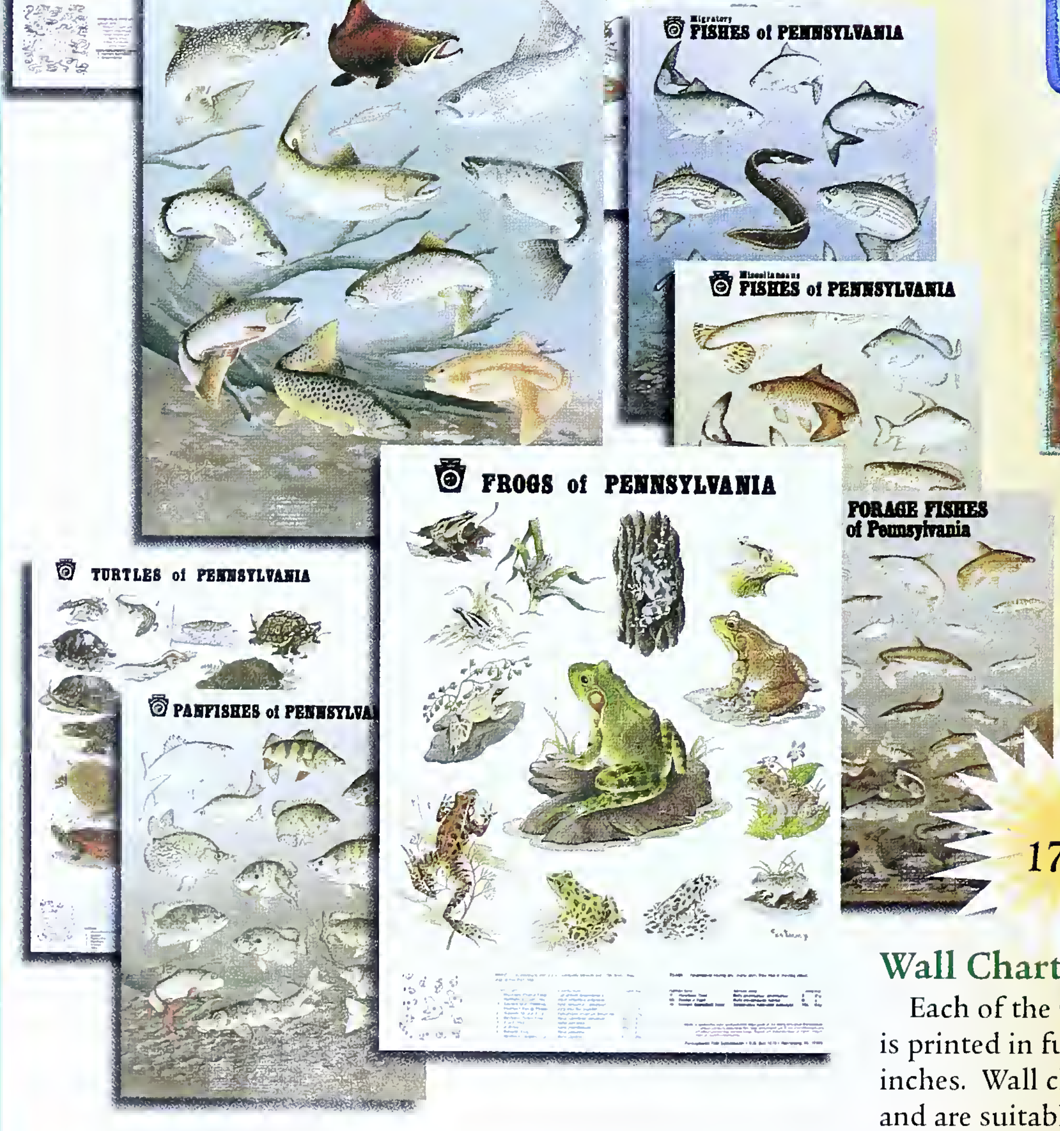
Commission commemorative patches are limited-edition items. Nongame species patches help raise awareness of Pennsylvania's nongame and endangered fish, reptiles and amphibians.

Limited Editions!

PENNSYLVANIA FISH & BOAT COMMISSION
CONSERVE
2000
PROTECT PENNSYLVANIA'S WATERS

PARTNERSHIPS FOR THE RESOURCE
1998
PENNSYLVANIA FISH & BOAT COMMISSION




SNAKES of Pennsylvania
Coolwater/Warmwater GAME FISHES of PENNSYLVANIA
SALAMANDERS of PENNSYLVANIA
Coldwater GAME FISHES of PENNSYLVANIA
Migratory FISHES of PENNSYLVANIA
Miscellaneous FISHES of PENNSYLVANIA
FORAGE FISHES of Pennsylvania
FROGS of PENNSYLVANIA
TURTLES of PENNSYLVANIA
PANFISHES of PENNSYLVANIA

BIG!
17" x 22"

Wall Charts

Each of the Commission's suite of 10 wall charts is printed in full color and measures 17 inches by 22 inches. Wall charts are printed on quality paper and are suitable for framing. Shipped rolled in tubes, not folded.

PLAY

FALL 2000

Pennsylvania • League • of • Angling • Youth

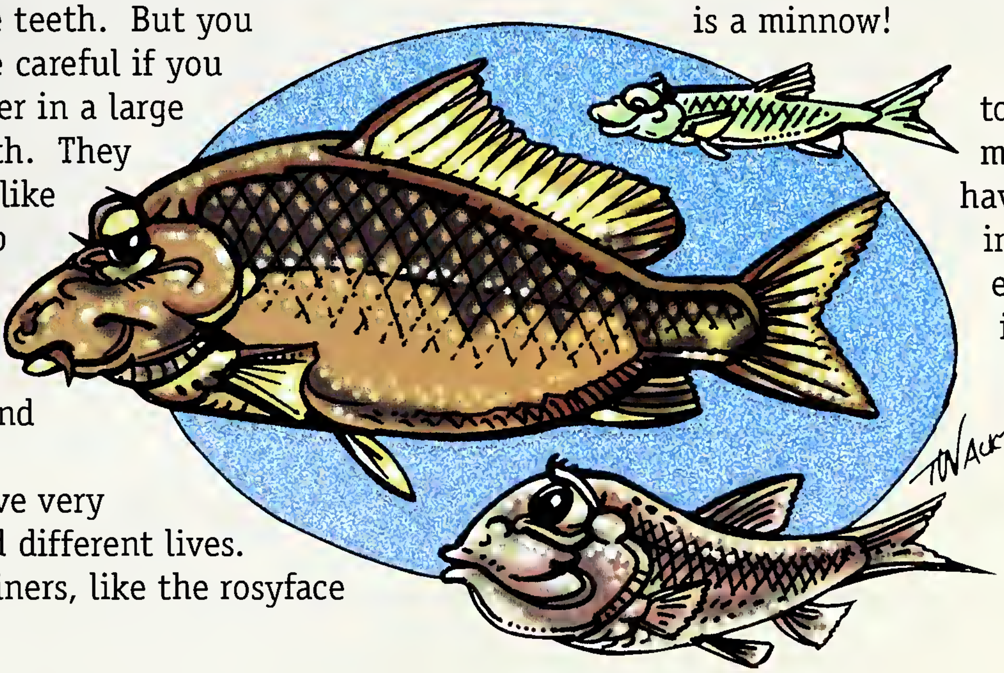
Misunderstood Minnows

Minnows are probably the most misunder-stood of all fishes. We often think of any small fish as a minnow. But not all small fish are minnows, and not all minnows are small fish. Two perfect examples are the darter and the carp. The darter grows only to a few inches, but that doesn't make it a minnow. Darters are actually in the perch and walleye family. Carp are minnows, but they aren't always small. A carp can grow to three feet long. A big fish like this is probably not what you have in mind when you think of a minnow!

The minnow family is a group of fish called **Cyprinidae.** This is the largest family of fishes. There are over 2,000 minnow species worldwide. Pennsylvania has almost 40 different types of minnows! This family includes carp, goldfish, dace, shiners, fallfish and chubs. One way to tell if a fish is a minnow is by looking at its fins and mouth. Minnows do not have spines in their fins. Instead, they have soft rays. They also don't have teeth. But you still need to be careful if you stick your finger in a large minnow's mouth. They do have tooth-like structures deep in the throat on the gill arches. This helps them grind up food.

Minnows live very interesting and different lives. Most of the shiners, like the rosyface shiner, are **carnivores.** They eat small insects and crustaceans. Stonerollers are **herbivores.** They have a hard ridge on the lower jaw to scrape algae off of rocks. Minnows like chubs and carp are **omnivores.** They eat almost anything that is plant or animal.

Minnows are important for many reasons. Most of them are **forage fish.** Predators like trout, bass, herons and otters love to eat minnows. This is one reason why minnows make such great fishing bait. They are also important as **scavengers.** There is nothing better at cleaning up a stream bottom than a creek chub or carp. Some minnows are helpful because they control plants and algae. Other minnows are important as **indicators** of good stream health. They can even grow so large that they provide great **sport fishing.** If you want to know more about fishing for minnows, check out the page on "Fishing for Minnows." Minnows can even make great pets. That goldfish in your fishbowl is a minnow!



There is a lot more to minnows than first meets the eye. They have an important role in the aquatic environment. They're important to humans, too. Sometimes they are just fun to look at because of their bright colors. Read on and learn more about minnows.

PLAY

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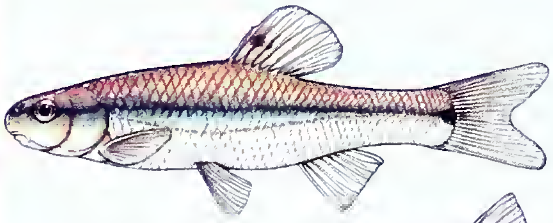
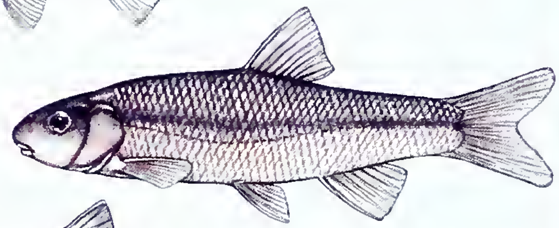
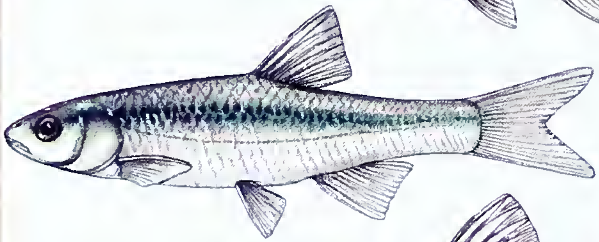
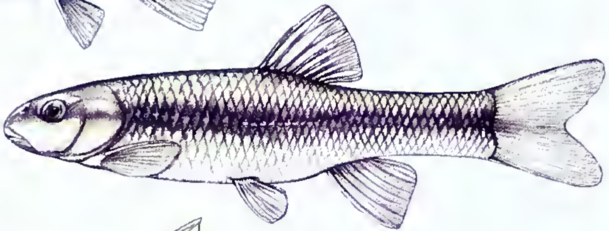
Minnows

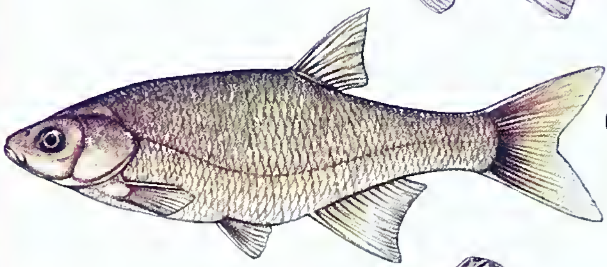
Here are some minnows you might see on fishing trips or while exploring a stream:

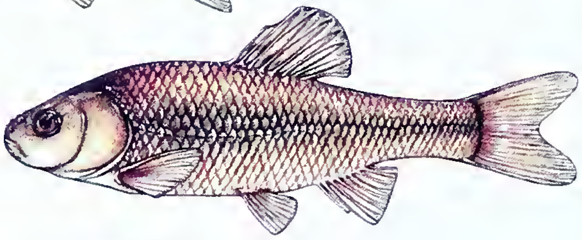

Bluntnose minnow

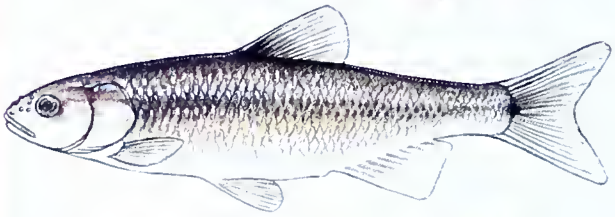
Cutlips minnow



Emerald shiner

River chub



Golden shiner

Fathead minnow



Creek chub

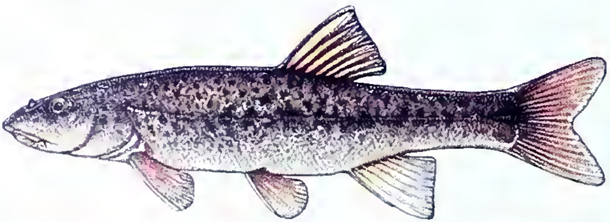
Longnose dace


illustration-Ted Walke

Minnows That Aren’

Here are some families that have small fish

Catfishes

Most catfish grow large, but there are a few that reach only a few inches. These smaller catfish are called madtoms. Madtoms look like any other catfish, but they stay small throughout their lives. They have smooth skin and barbels, or “whiskers,” on their mouths.

Madtoms are rarely seen because they are nocturnal. They hide during the day and come out at night to feed. They use their barbels to sense and locate food.

Suckers

Suckers, even the large ones, look like minnows. One way to tell a sucker from a minnow is by its anal fin. A sucker’s anal fin is much farther back on the belly than on a minnow. It also has a fleshy downward-pointing mouth. It uses that mouth to vacuum insects and plant food from the stream bottom. Suckers can be found in just about any stream or river.

Perches

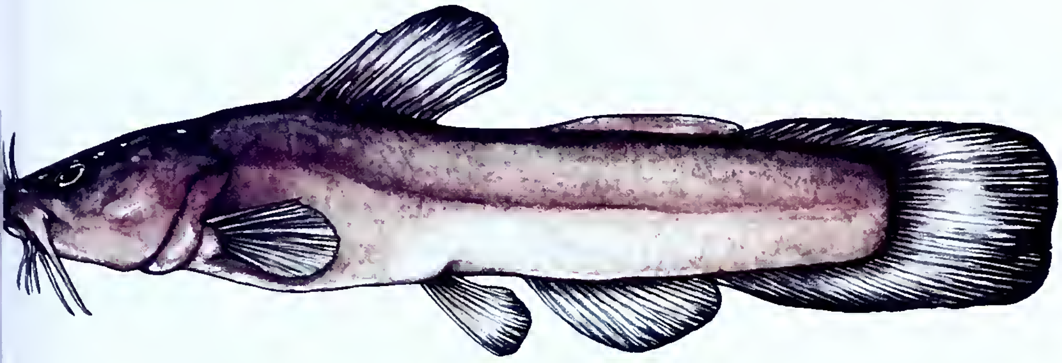
Bet you didn’t know that darters are members of the perch family! It’s hard to believe that these small fish are related to the yellow perch and the larger walleye. Darters rarely grow more than two inches long. Their small size keeps them well-hidden.

Sculpins

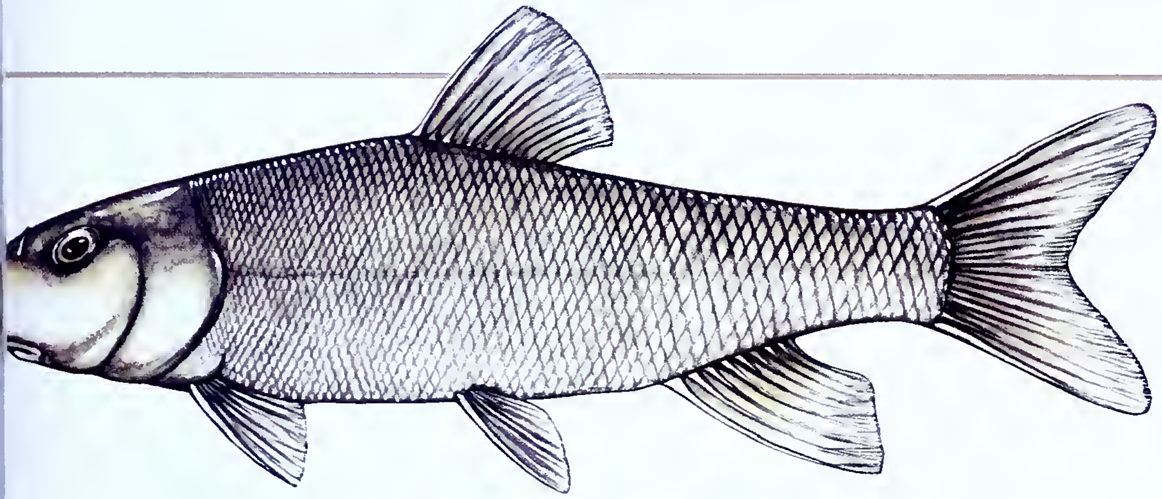
Sculpins are small, “primitive”-looking fish. Most sculpins are actually saltwater fish. The sculpins we see have adapted to fresh water. They look a lot like darters, but they are plumper. Sculpins prefer clean, cool streams. They live on the bottom and are hard to see because of their mottled colors.

Minnows, But They Sure Are Small Fish!

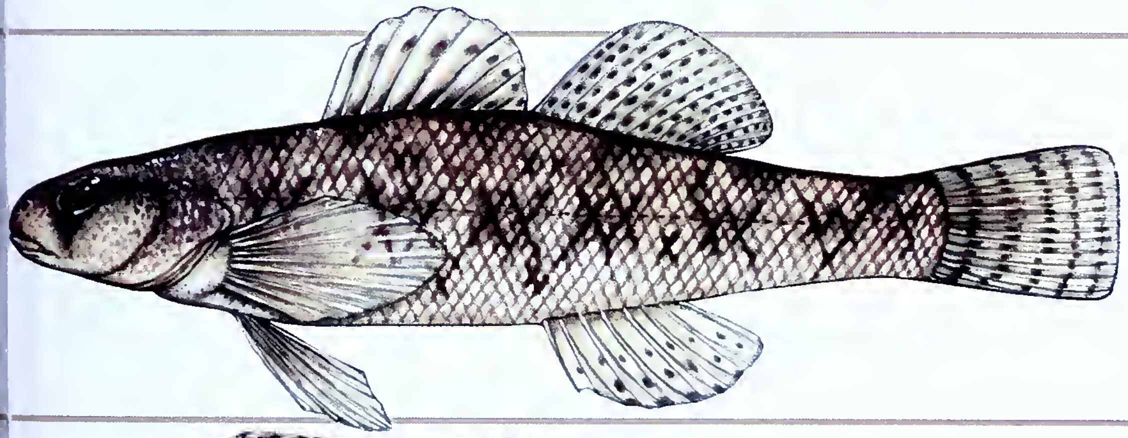
These small fish are sometimes incorrectly called minnows.



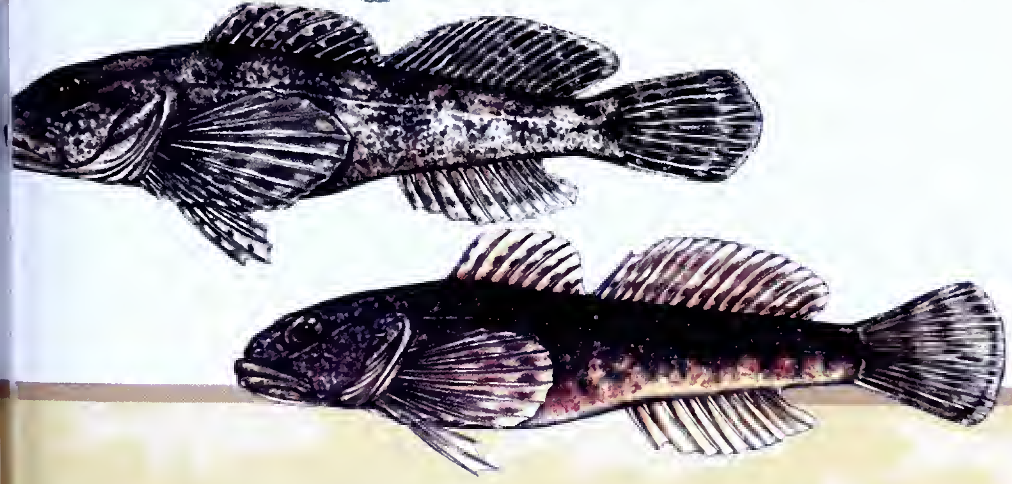
One madtom you might find in eastern Pennsylvania is the margined madtom. Madtoms are indicators of good water quality. Catching or seeing one means that the water is healthy. Just be careful when handling them. These fish have spines that can sting!



Suckers are important as forage fish for predators. The best time to see a sucker is in the spring. Visit a nearby waterway and you will probably see hundreds of suckers migrating upstream to spawn. One common sucker is the white sucker.



Darters are some of our most colorful fishes. Darters can be found in lakes and streams. They are important as food for larger predators. One common darter in western Pennsylvania is the tessellated darter.



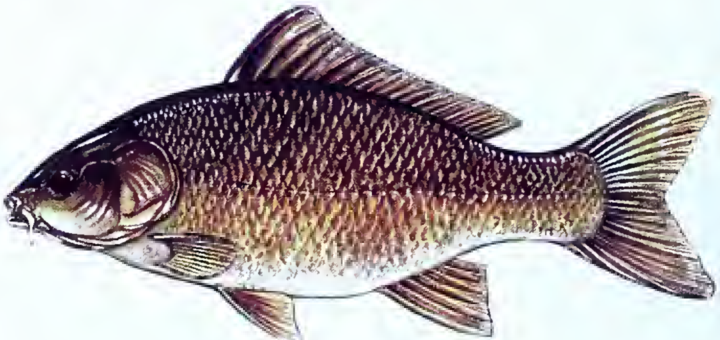
Camouflage is what keeps sculpins hidden from predators. They use their fanlike fins and flattened body to stay pressed against the stream bottom. The most common members of this family are the mottled sculpin and slimy sculpin.

Minnow Match

Directions: Match the minnow picture to its common name.

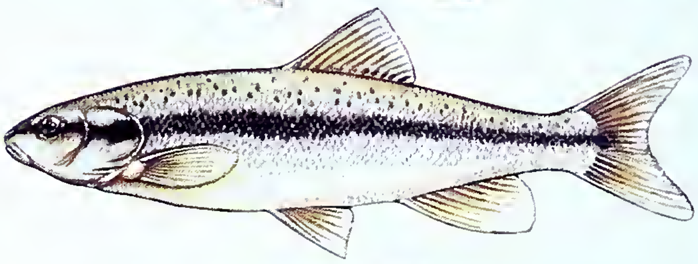
1. BLACKNOSE DACE

a.



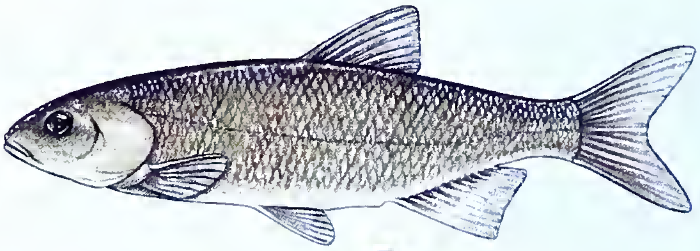
2. RIVER CHUB

b.



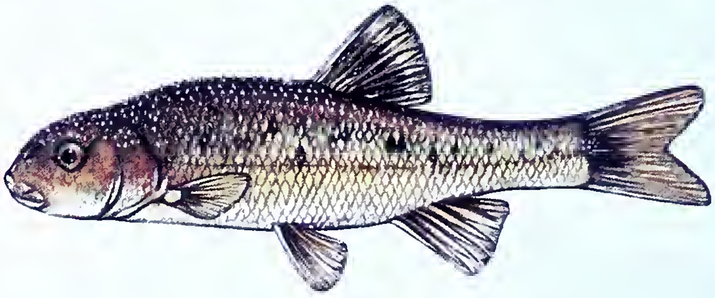
3. CARP

c.



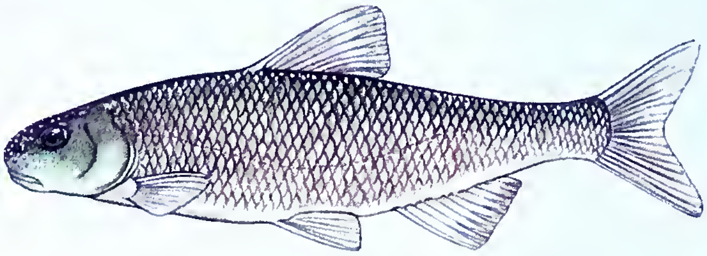
4. COMMON SHINER

d.



5. CENTRAL STONEROLLER

e.



6. FALLFISH

f.

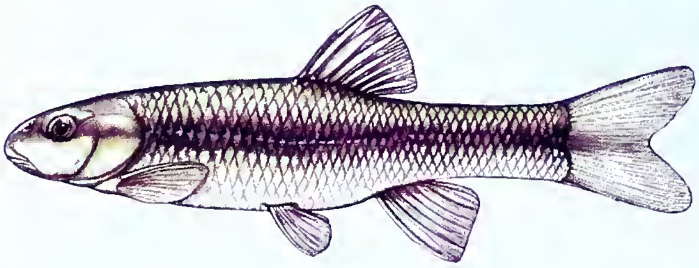


Illustration-Ted Walke

Minnow Maze

Directions: Help Charlie the Chub find the shortest way through this aquatic maze to his favorite hiding place.

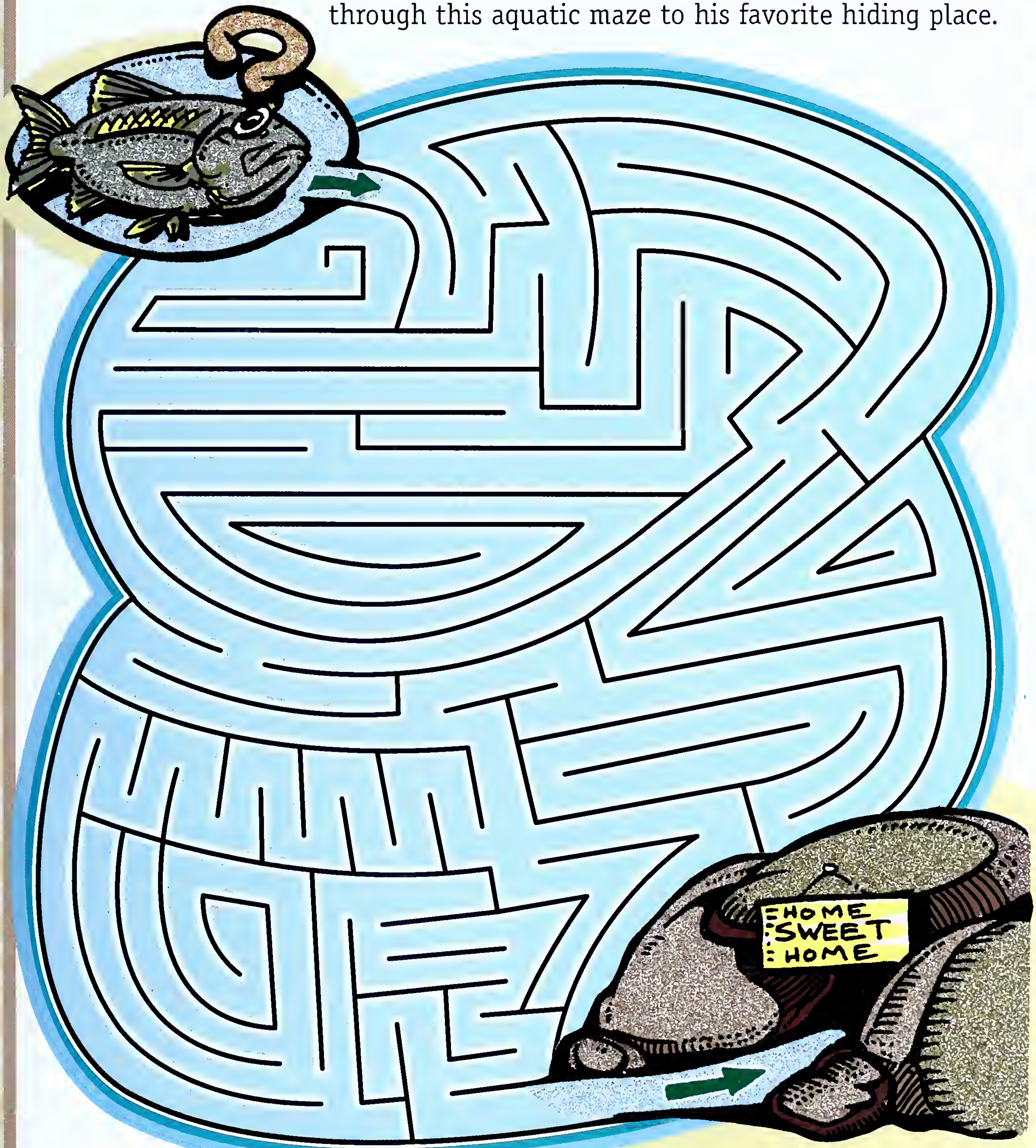


illustration-Ted Walke

Fishing for Minnows

***Have you ever thought of fishing for minnows?* Catching minnows is probably the last thing you think of when you grab your tackle and head for the creek. But there is one minnow that grows to huge sizes and can provide some of the best fishing fun! If you guessed carp, you are right! Carp can reach a length of three feet and weigh 20 pounds or more! That's a pretty big minnow!**

Carp are often thought of as "trash" fish when compared to sport fish like trout and bass. Nothing could be further from the truth. You are missing some great angling opportunities if you don't think carp are sporty. They are wary and not as easy to catch as you might think. That's the challenge of catching one. Carp also put up a great fight once hooked.

Below are some tips to help you catch a carp. Just remember this formula:

Tackle
+ Rig
+ Bait
= Carp Fishing Fun

Carp Tackle

Carp are strong fish and require heavier tackle and line than you might use for trout or bass. You can use light tackle for a challenge, but be prepared for a fight and some lost fish. Medium-weight tackle is your best choice in most cases. Open-faced spinning, closed-faced spinning and bait-casting tackle all work just fine. Your rod and reel should be able to handle 8- to 12-pound fishing line. You can use heavier line, but remember that carp are wary. They might be able to see your line if it is too heavy.

Rigs for Catching Carp

You need to use sinkers to keep your bait on the bottom. Carp can also sense tension when they pick up your bait. So it's best to use as little weight as possible. A few small splitshot or a medium-size sinker should do fine.

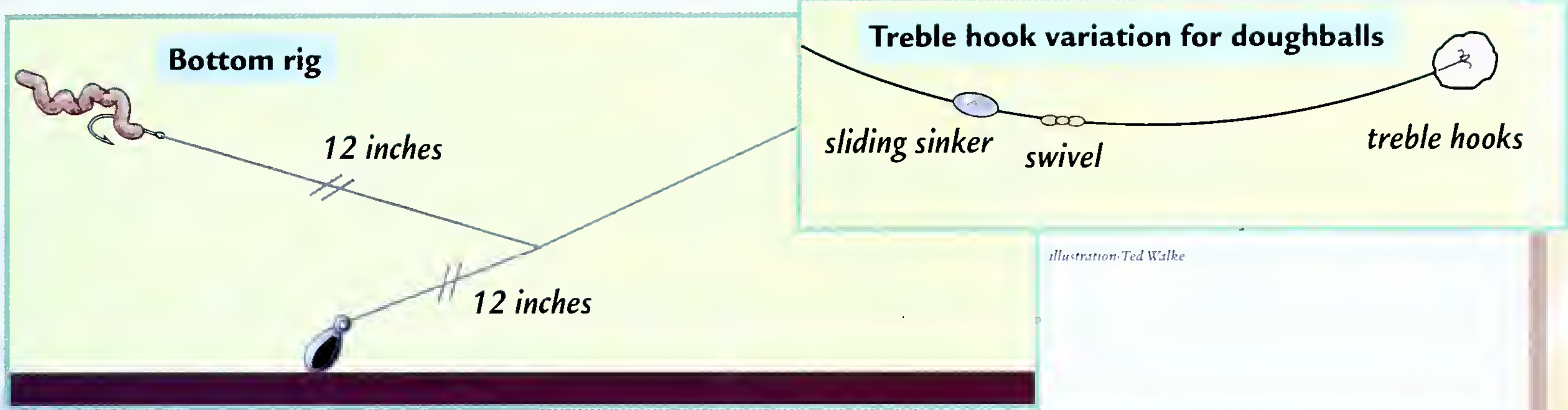
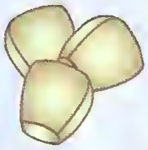


illustration-Ted Walke

Best Baits for Carp

Carp can be caught on just about anything. They can be taken on artificial lures like spinners, plugs and even dry flies. The best way to catch a carp is with live bait. Here are just a few different baits that you can find in your kitchen, backyard or nearby stream.



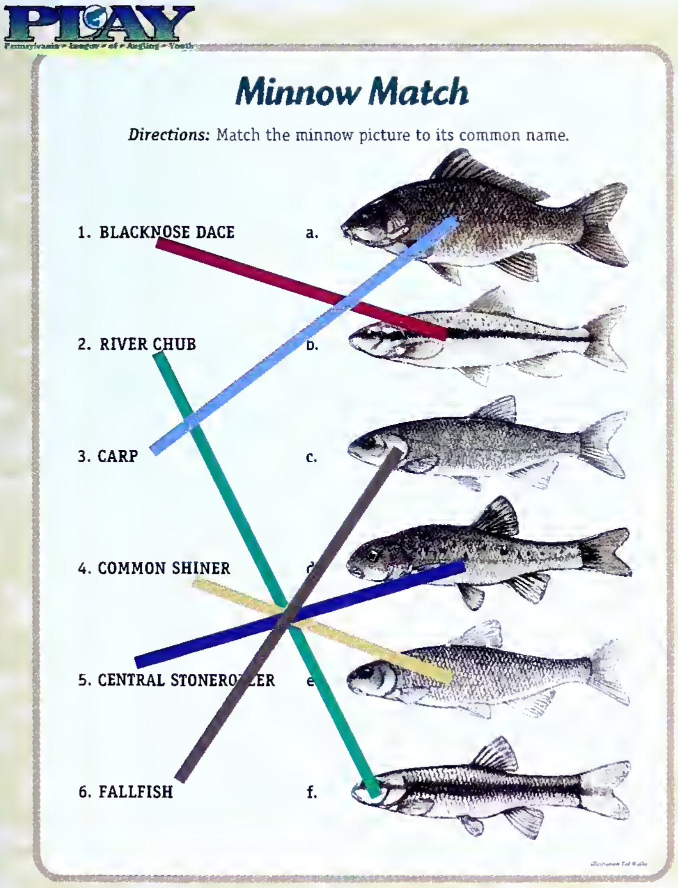
Corn

Doughball

Crayfish

Worm

Answers to this issue's puzzles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Minnow Match

Directions: Match the minnow picture to its common name.

1. BLACKNOSE DACE a.

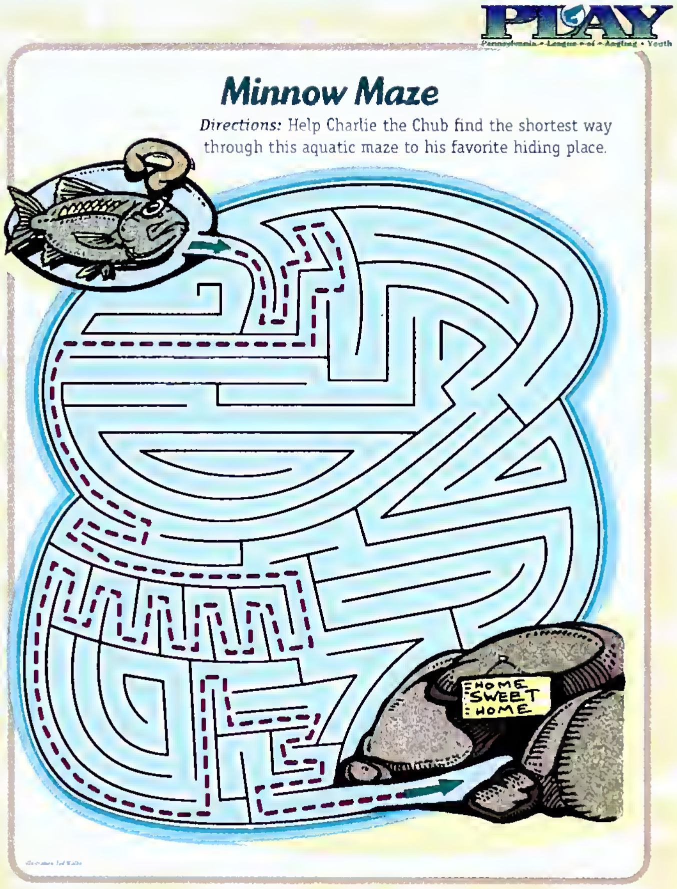
2. RIVER CHUB b.

3. CARP c.

4. COMMON SHINER d.

5. CENTRAL STONEROLLER e.

6. FALLFISH f.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HOME SWEET HOME

Minnow Maze

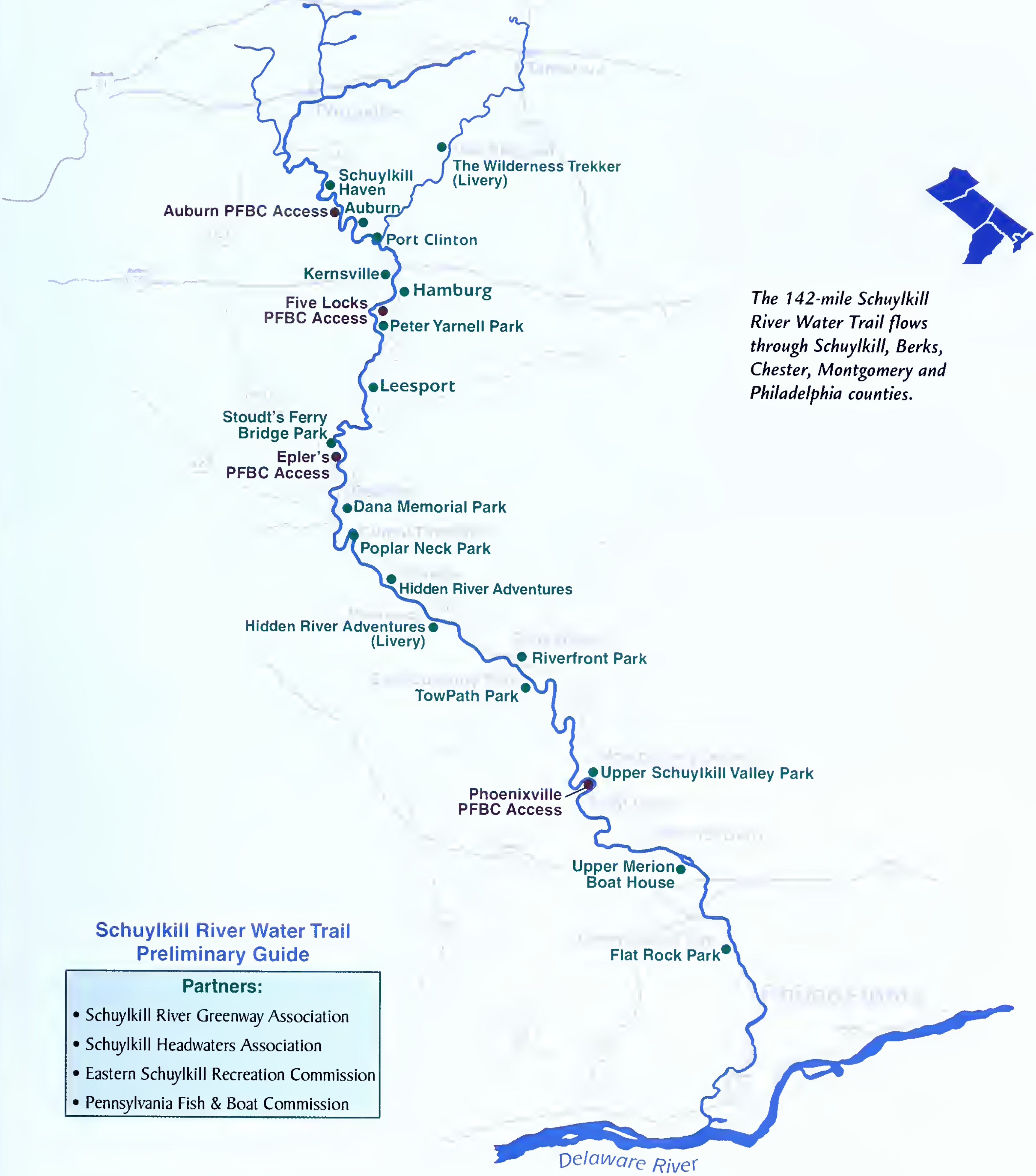
Directions: Help Charlie the Chub find the shortest way through this aquatic maze to his favorite hiding place.

The Schuylkill River Water Trail

by Dixie Swenson

photo-Fred Hatt

If all you know about the Schuylkill River is what you experience from the Schuylkill Expressway, you're in for a surprise. If you're looking for a great day on the river, the Schuylkill River is the place—and somewhere along the new Schuylkill River Water Trail you can find just the experience you're looking for.



The 142-mile Schuylkill River Water Trail flows through Schuylkill, Berks, Chester, Montgomery and Philadelphia counties.

Schuylkill River Water Trail Preliminary Guide

Partners:

- Schuylkill River Greenway Association
- Schuylkill Headwaters Association
- Eastern Schuylkill Recreation Commission
- Pennsylvania Fish & Boat Commission

Water trails provide a route from place to place, and, like land trails, there are entry and exit points with places to park your car (trailheads). On the Schuylkill, there are several places where the water trail and the Schuylkill River Trail (a 135-mile regional land trail) will share trailheads, preserving our riverfront land and making it easier to combine canoeing with hiking and biking.

The Schuylkill River Water Trail is 142 river miles long and travels from the headwaters through five counties—Schuylkill, Berks, Chester, Montgomery and Philadelphia—to the confluence with the Delaware in Philadelphia.

From the Commonwealth's earliest history, the Schuylkill was a navigational river transporting goods

Peacock's Bridge, between Leesport and Reading

from Philadelphia to the developing lands to the west and returning grain and manufactured items to Philadelphia markets. River commerce accelerated rapidly with the discovery of anthracite coal in Schuylkill County, and the Schuylkill Navigation Company built a series of dams and canals, creating a more reliable transportation system to meet the demands of both the valley's growing industrial base and the export markets in Philadelphia.

As you travel down the Schuylkill River, there are many reminders of this early transportation infrastructure. Several locks, locktenders' houses and other remnants of the canal are still visible from the river or just a short walk away. Leesport and Mont Clare both have locktenders' houses that are open to visitors, and groups in Mont Clare and Manayunk (a northwestern neighborhood of Philadelphia) have made significant investments to preserve watered sections of the canal.

The Schuylkill River Watershed contains 1,906 square miles, and you will encounter many tributaries flowing into the Schuylkill as you make your way down the river. The most noticeable of these are the Tulpehocken, Manatawny, Perkiomen and Wissahickon.

The Schuylkill River Water Trail is shaped like a "Y" with a very long tail. As you travel from the headwaters to the confluence, the waters change dramatically. The Little Schuylkill is narrow, fast-running with some Class II sections, and ideal for kayaking in the spring and early summer. Past the confluence of the Little Schuylkill and Schuylkill at Port Clinton, the river widens and generally takes a somewhat more leisurely pace toward Philadelphia. And once you pass Fairmount Dam, the Schuylkill becomes a tidal river, subject to ocean tides and offering still another type of river experience.

You'll find the sights and sounds from the river also vary as you travel downstream.

The Little Schuylkill generally flows through unspoiled wilderness, while the main branch in Schuylkill County flows through small river communities, past remnants of the canal, and through areas where unique vegetation and birdlife abound.

In the Reading area, the river passes between large industrial complexes and meanders near suburban residential developments. Continuing downstream, you'll go through places where old dams have been removed and journey around several "thumbs" on the river. You'll travel past Valley Forge National Historical Park and the major historic industrial communities of Pottstown, Norristown, Conshohocken and Manayunk to Fairmount Park, the nation's largest urban park.

Truly a river of diversity, there are countless ways to enjoy the Schuylkill's natural beauty and rich heritage. Take time to explore a river that helped shape our nation. Experience the Schuylkill!

The Schuylkill River Water Trail is continuing to develop, so make sure you have the latest information for your trip. Please check the Schuylkill River Heritage Corridor website, www.schuylkillriver.org, or call the Schuylkill River Greenway Association at 610-372-3916 for a Schuylkill River Water Trail Guide.

There are 12 dams along the Schuylkill. They vary in size and condition, so make sure you get the latest information before starting your trip.

Please observe all rules and regulations in the local parks along the way. Most require permits for overnight camping.

Canoe livery service is available from Wilderness Trekkers, 570-943-3151, and Hidden River Adventures, 1-800-FLOATPA.

Dixie Swenson is Executive Director of the Schuylkill River Greenway Association.

14 Tackle Tips

by Lou Elkes

Just about all my fishing partners are better anglers than I am. Each specializes in catching certain kinds of fish, so each trip I take with them is a learning experience.

These experts have several things in common. No matter what they're after, they all use the same smart ideas on tying knots, making rigs, using hooks and lures, playing fish and caring for their tackle. These ideas aren't complicated, and none of them requires great expense.

Here are some of those secrets.

Knots, line

✔ Tie several knots well. Learn to tie four or five knots well and you would know enough to handle just about any fishing situation expertly.

✔ Know when to use each knot.

✔ Moisten monofilament line before packing down a knot. Tightening a wet knot makes a stronger, smoother connection than tightening a dry one.

✔ When a knot doesn't turn out right, cut the line and start again.

✔ Practice knot-tying. Start with clothesline for the more challenging knots. Then work your way to 80-pound mono before you try tying the knot in 6-pound test in a bouncing boat.

✔ Change leader material frequently. After catching fish, look at your line or leader material and feel it. If it's frayed, cut off that part until you get to fresher line.

✔ Tie rigs with as little hardware as possible. Choose first to make rigs only with hooks, sinkers, mono line and good knots before you opt for brass and wire additions.

✔ Check your rod guides regularly, especially the tiptop. Nicks and scratches in the guides can cause break-offs at the worst moments. Replace guides and the tiptop when necessary.

Hooks

✔ Sharpen hooks often. Until you acquire the habit of sharpening hooks, you'll never know what greatly increasing your hook-up rate is like.

Reels

✔ Adjust your reel drag properly. To adjust a spinning reel's drag, gather about two feet or so of line directly in front of the reel and wrap it around your hand. Jerk the line forcefully off the spool with the bail closed. This simulates a big fish's sudden strike or powerful run. Tighten or loosen the drag setting so that a quick, strong tug just barely takes line off the reel.

On a baitcasting outfit, gather two feet or so of line directly in front of the reel and tug it quickly and strongly. Adjust the drag so that tugging gives line but does not allow extra line to peel off the reel or gather loosely around the spool.

✔ Clean and lube your reels every season. Replace the drag washers if necessary.

photos-Art Michaels

Lures

✔ Make sure your lures are tuned properly. Check whether they run straight in the water. If they don't, bend the screw eye in the plug's lip one way or the other until the plug runs straight.

✔ In difficult casting situations a straight retrieve might not bring the lure close enough to a target. Bend a plug's screw eye to let the detuned plug run itself into an area without initially casting the offering there.

✔ Inspect your lures regularly for damage. Rusted, bent or broken hooks, loose screws and damaged swivels could contribute to losing nice fish. Salvage plugs worth saving and replace hopeless cases.

The Zebra Midge

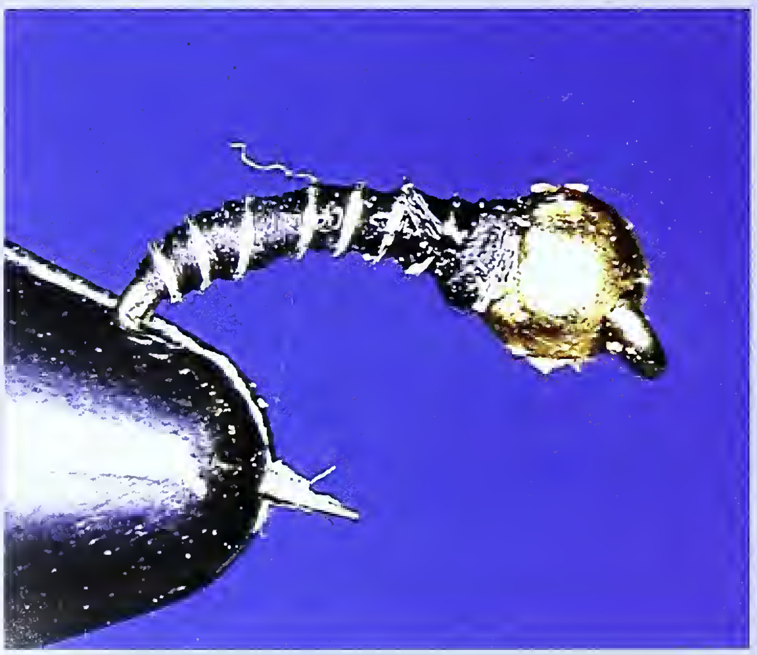
by Charles R. Meck

Sometimes some of the simplest fly patterns are the most productive. I first found out about a great new pattern when I fished the Lee's Ferry section of the Colorado River in northern Arizona recently. Frank Nofer, an attorney from Philadelphia, and I arrived at the boat access at 7 a.m. to meet our guide, Chad Bayles. We traveled upriver several miles before Chad guided the boat to shore and asked us to try a productive-looking riffle.

For the first half-hour I didn't catch a thing on the size 14 beadhead Pheasant Tail Nymph. But things were about to change–and change quickly. I tied on a size 18 Zebra Midge two feet behind and at the bend of the hook of a size 12 Patriot dry fly. The dry fly kept the Zebra Midge from going too deep, and it acted as a strike indicator. On the second cast, a 14-inch rainbow quickly sucked in the midge imitation–not bad for that new pattern. Three more casts and I hooked a 20-inch rainbow. Chad and Frank had the same success with the pattern. For the next two hours, one of the three of us had a trout on almost continuously.

Would this same pattern be effective in Pennsylvania? I'd soon find out. I was eager to test this pattern back in the East.

For the past 20 years I have opened the Pennsylvania trout season on Bald Eagle Creek in central Pennsylvania. It's a tradition. The stream has some good early season hatches but also plenty of early season angling pressure. When we arrived we noted that the stream was as low at it ever was on an opening day. For the first hour of the season I drifted a heavy Woolly Bugger without getting even one strike. Then I moved to a stocked pool. Ten bait fishermen lined both shores and gave me little room to cast. I moved to the lower end of the pool and stood and watched for a few minutes. I noticed a trout feeding occasionally at the tail of the pool. Then I saw several other trout feed just a few feet upstream from where I stood. I saw only midges on the surface, so I decided to give the Zebra Midge a try. I tied it on a tandem two feet behind a size 12 Patriot dry fly. After only a couple of drifts, the Patriot sank and I set the hook on a 12-inch brown trout. In the next hour I landed nine more trout on that size 18 pattern while the bait fishermen circling the pool landed only a couple. The Zebra Midge worked to perfection on a Pennsylvania stream–even on the opening day of the season.



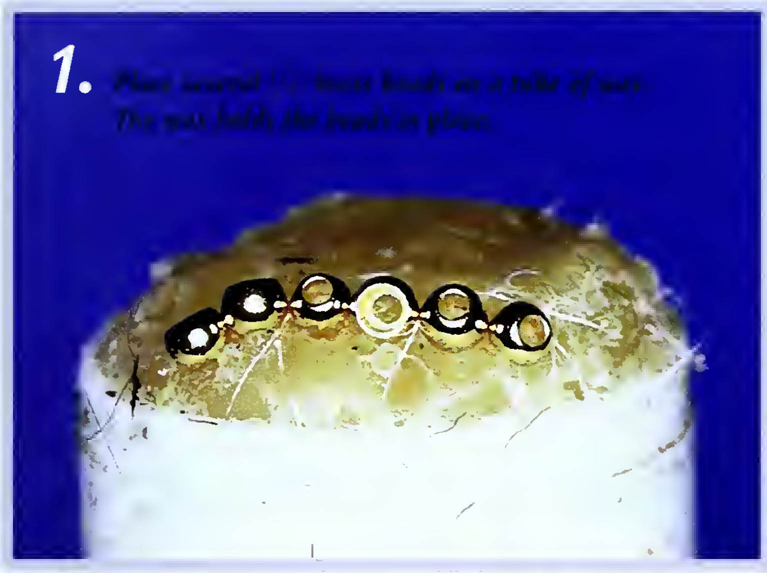
Recently I conducted a basic fly fishing course for the Community Academy for Lifelong Learning (CALL) in State College. None of the participants had ever fly-fished before and no one had waders, so on the final day of the class, the group met at the Fisherman's Paradise section of Spring Creek. This section holds great midge hatches much of the year, so the entire class started out with Zebra Midge patterns. Although they landed only three trout in two hours, the six class members had a total of 15 strikes on that pattern. Anybody who has fished this section of Spring Creek knows that fishing pressure in this area is heavy and landing even one trout in two hours on many days is an accomplishment.

But the test of all tests happened on the Little Lehigh in southeastern Pennsylvania in early May. Recently I had an opportunity to have two anglers try the Zebra Midge on that heavily fished stream. I handed one to Thom Adams and another to his brother, Tim Adams, both from southeastern Pennsylvania, and asked them to try the Zebra Midge. As a result of their success that afternoon, Thom and Tim have become avid fly fishers and will no longer fish without a good supply of these small patterns.

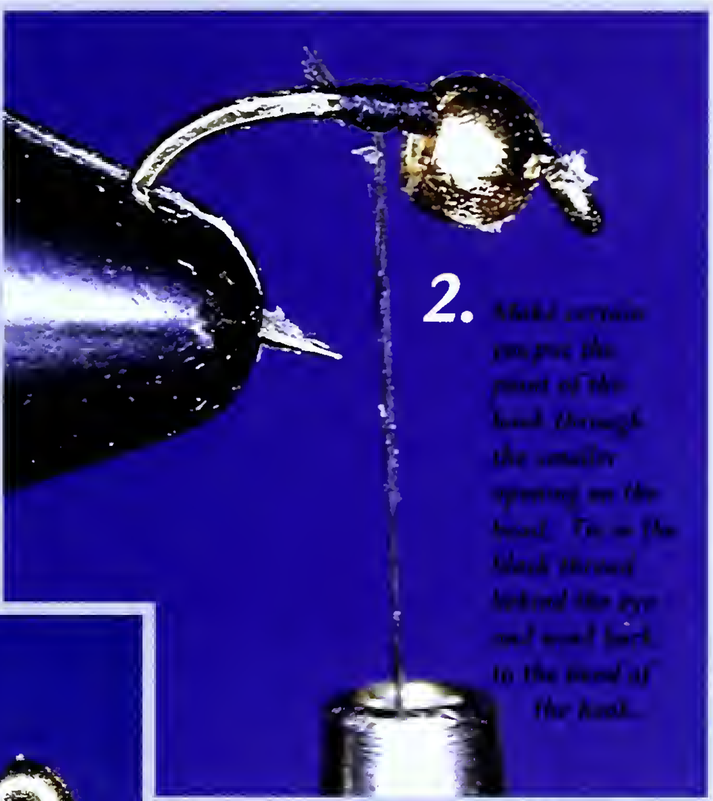
Don't overlook the Zebra Midge during the fall and winter. Many of Pennsylvania's top streams hold great midge hatches every day throughout the fall and winter. The Zebra Midge should work well then.

The Zebra Midge is so productive and easy to tie that even if you've never tied a fly before, you should try this one. All you need is a hook, a bead, black tying thread and fine silver wire. That's it! It's so easy to tie that I've had anglers who never tied before finish one of the patterns in a couple of minutes.

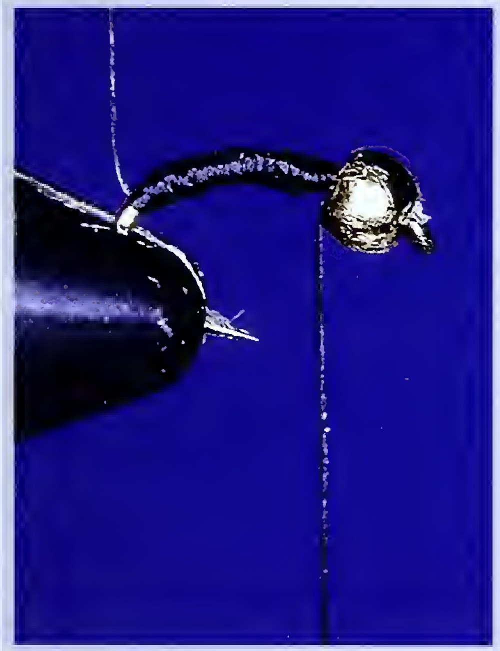
When you're confronted with pattern selection or you're fishing one of those heavily fished streams this year, remember the Zebra Midge. It will definitely work for you.

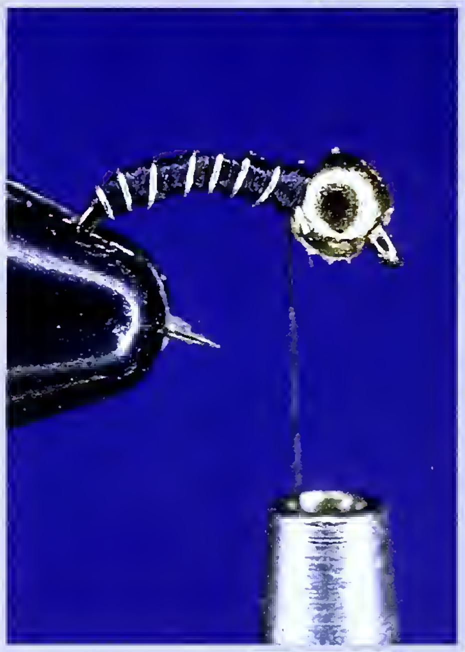


1. *Place several [illegible] brass beads on a tube of wax. The wax holds the beads in place.*



2. *Make certain you pass the point of the hook through the smaller opening on the bead. Tie in the black thread behind the eye and wind back to the bend of the hook.*





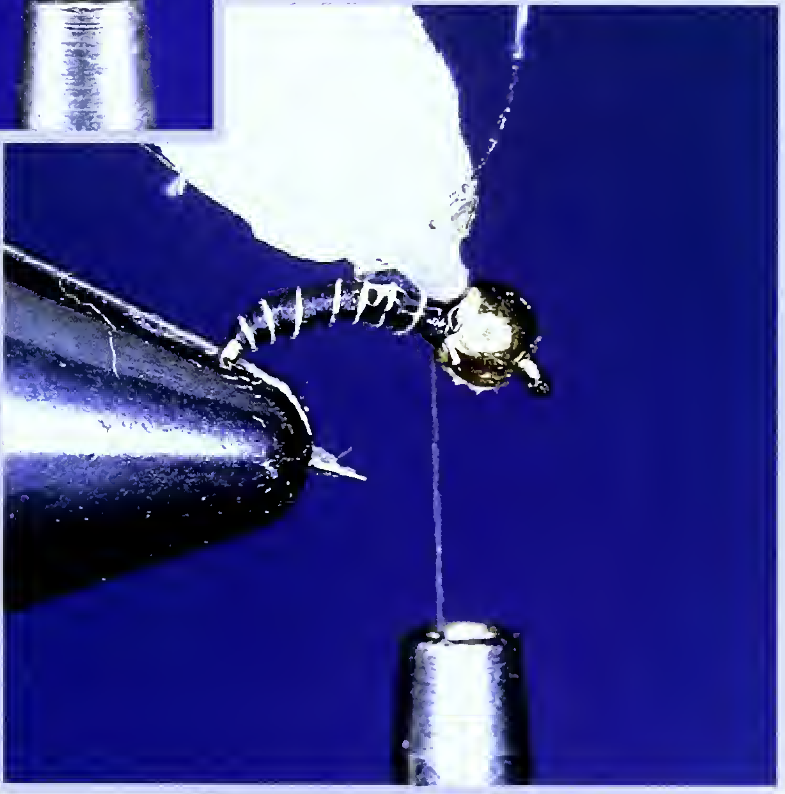
4. *Rib the body with the fine silver wire. Rib the body fairly close so that you make about seven wraps with the wire.*

3. *Tie in a two-inch piece of fine silver wire at the bend. Now wind the black tying thread toward the eye. Make certain that you cover the hook shank completely with the tying thread.*

Dressing: Zebra Midge

Hook: Size 16 to 20 shrimp/caddis hook.
Thread: Black, chocolate-brown or olive 6/0 not prewaxed.
Body: Black, chocolate-brown or olive tying thread.
Ribbing: Fine silver wire (for black body) or a fine copper wire (for chocolate-brown or olive body).
Bead: Brass (for the black body) or copper (for the chocolate-brown or olive body).

photos-Charles R. Meck



5. *Tie off the wire just behind the butt and add a drop of Krazy Glue at the bead to hold it in place. Whip finish and cut off the black tying thread.*

FUTURE CLIMATE:

Cloudy for Some Fish?

by Karl Blankenship

The long-range forecast for Pennsylvania calls for slightly warmer and wetter conditions, with an increasing chance of thunderstorms. And the fishing outlook is good for smallmouth bass, but poor for trout—brook trout in particular.

photo-Art Michaels

But don't trade in the fly-fishing gear just yet. "Long-range," in this case, isn't next week or next month—it means the next 100 years. It is a potential scenario for future conditions produced by Penn State scientists and others who recently completed the first detailed study of potential climate change effects on Pennsylvania and other mid-Atlantic states.

They admit their crystal ball is foggy at best. "We're not trying to project what the future actually will be," cautioned Ann Fisher, of Penn State's Environmental Resources Research Institute, who is coordinating the effort. "We don't think we know enough about that. But we think we know enough to say—given what we know about the physics of the climate and how it might evolve over the time—what might likely happen in the Mid-Atlantic region."

A team of scientists has worked nearly two years on the Mid-Atlantic Regional Assessment, one of a series of regional studies sponsored by the U.S. Environmental Protection Agency to look at potential long-term effects of climate change in different parts of the country. The recently published report, "Mid-Atlantic, Preparing for a Changing Climate: The Potential Consequences of Climate Variability and Change," paints a mixed picture for the future in Pennsylvania and nearby states.

The scientists derived regional climate estimates from two highly regarded computer models, one from Britain and one from Canada. The models indicate that temperature increases of two degrees by 2030 "are likely" with an additional increase of three to eight degrees possible by the end of the century. Also, the report says, there is a "high likelihood" that the average annual precipitation will increase by the end of the century, possibly in the range of three inches to 10 inches a year.

Overall, climate change would be a mixed bag for the region. Forest production may increase from increased carbon dioxide, but the species of trees may change. Some agricultural crops may benefit, while others could suffer.

The mixed-bag outlook is true for fisheries as well. Not surprisingly, the number of warmwater streams would increase, and the number of coldwater streams is likely to decrease, the report said.

Some of the worst news is for the state fish, the brook trout, which requires clean, cold water. The brook trout range has gradually withdrawn to higher, more remote streams over time. That range contraction is likely to continue, and perhaps accelerate as temperatures warm. In addition, brook trout throughout the region will face increasing competition from the larger, more aggressive brown and rainbow trout, which are less sensitive to temperature fluctuations. "Brook trout might be lost from many [Mid-Atlantic region] streams," the report said.

Still, the report cautioned, gradual increases in temperature over time will continue to favor the brown trout, which will likely migrate into the restored areas and compete directly with brook trout. Also, the report said, restoring degraded streams to the quality demanded by brook trout would be a long-term proposition.

Not all the news is bad, especially for anglers who like warmwater species such as largemouth bass, smallmouth bass, catfish, carp and panfish. As temperatures increase and trout habitat shrinks in lower elevations, bass habitat will likely increase, the report said. And some species, such as smallmouth bass populations, would not even be bothered by reduced stream flows that might occur in the summer—it's the condition they prefer.

But the prediction for smallmouth bass and other warmwater fish is not without its clouds. If the warmer climate leads to more severe storms, as some scientists suggest, it could increase sediment, and nutrient and chemical pollution from farms and other land uses, because hard rains drive more runoff into streams than do gentle showers. Also, warmer water holds less oxygen, so dissolved oxygen levels in some areas will decrease as lakes and streams warm. Those effects could stress not only fish populations, but freshwater ecosystems as a whole, the report said, raising concerns about the future of mussels and other rare species.

The Mid-Atlantic region's fishing concerns, though, are in general agreement with conclusions from a 1995 EPA study. Nationwide it predicted "significant" losses in coldwater fish across the nation, with the greatest effects at the edge of their natural range. Nationwide that could translate to an economic effect of $85 million to $322 million a year in lost recreational fishing, according to the EPA study. But it said those losses could be reduced if anglers were willing to switch from coldwater fish to warmwater fish. Still, the report said, "some cold-water habitat will not be suitable for warmwater fish, so some fishing opportunities will be lost."

A survey of anglers done as part of the Mid-Atlantic study found anglers were willing to pay, on average, $4 a year to help prevent the potential changes to fish habitats. But to get answers, researchers found they had to describe changes to fishing areas without saying that global warming or climate change was responsible. The reason: Focus groups found them too skeptical about the issue. "For the most part, they thought it was not true, not happening," said Matt Heberling, a graduate student who worked on the economic analysis.

Even though scientists believe the climate is changing, they acknowledge that future projections are highly variable. Regional and seasonal projections are even more uncertain than global projections. As a result, the Mid-Atlantic report doesn't suggest that new actions be taken just because of potential climate change. Instead, it says climate change merely provides additional reasons to take actions that already make sense. These include such things as runoff controls for agriculture and other land uses, watershed planning to protect water quality and streamside forest planting, which also improve habitat. Said Fisher: "This just gives you one more reason to be taking actions that are beneficial, and cost-effective anyway."

Notes from the Streams

Right on cue

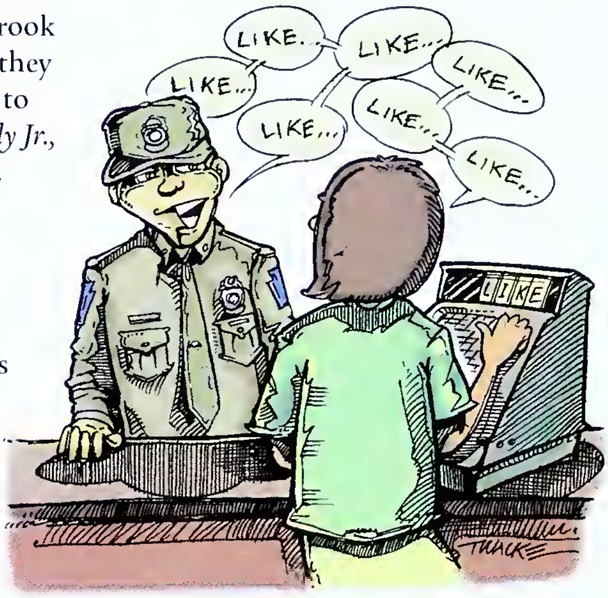
Regional Manager Kerry Messerle and I scheduled a meeting with PennDOT officials concerning a water pollution problem on a small tributary to Mehoopany Creek. I explained my concern for the stream because wild reproducing trout lived in the creek. One of the PENNDOT men chuckled and remarked that the stream sometimes dries up in the summer, doubting there could be wild trout in the stream. Just as he finished his chuckle, two beautiful wild brook trout swam out in full view, as if they had heard the comment and had to prove a point.–*WCO Larry L. Bundy Jr., Wyoming/Eastern Sullivan Counties.*

Promise to be more observant

While patrolling Kahle Lake in Venango County one evening this past summer, I saw the outline of what I thought was a boat anchored with no lights. It was past the time when lights were required, so I began to formulate a plan on how to get the attention of the boat's occupants and call them in so that I could speak to them. Luckily, no one was around to observe my actions as I tried to wave them in. Then I realized that it was not a boat at all, and that I was attempting to get the attention of the outfall structure of the lake's dam. I promise to be more observant in the future. Imagine my chagrin when, this winter, I was using a telescope to count ice fishermen's devices and found myself counting cracks in the rocks on the same dam as tip-ups, and thinking that the same outfall was an ice fishing hut.–*WCO Thomas Tarkowski, Venango County.*

Like "Baywatch"?

Over my career as a WCO I have been called many different names and have been known as many different things, and even though I am well-satisfied with my job, I think I must have missed my calling. While paying for an item at a local convenience store, the clerk behind the counter was staring very closely at my badge, and read it slowly out loud, "Con-ser-va-tion Of-ficer?" Looking quite puzzled, the clerk asked me, "Like, what do you do?" I was short on time, and with a line of people waiting behind me, I told the clerk that I worked around the water with fish and boats and investigate pollutions. The clerk replied, "Like with boats?" At this time I realized I was in a "like" conversation. I said, "Yes, you know, like Blue Marsh Lake?" The clerk answered, "Oh,...you mean like 'Baywatch'?" I just shook my head "yes," and as I was walking out, I thought, "like...not really."–*WCO John V. Sabaitis, Berks County.*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THACKER

Worst part of it?

A non-resident recently made the unfortunate choice of fishing spots one dark Monday night in October when he netted five steelhead trout in front of me and Deputy Dave Benincase, who staked out the location. On apprehension of the suspect, it was a happy reunion because I had just cited the unlucky angler the Monday before for the same type of violation. His failure to post bond landed him in the Erie County Prison (clad in chest waders) for a two-night stay until his wife could make arrangements for his release. In the meantime, his vehicle, which was illegally parked at a nearby health care facility, was towed away and impounded. After the hearing dates were set, the subject called me with several questions and said that the worst part of the entire ordeal was "getting teased by murderers, rapists and prison guards about being incarcerated for fishing violations."–*WCO John W. Bowser, Erie County.*

Purple Heart recipient

On what I'd describe as an up-to-then uneventful very hot yet beautiful day last summer, I patrolled one of the local trout streams. The fishing pressure there had practically ceased over the last month, and I didn't really figure to see anything happening. To my surprise, I spotted a car parked at an area frequented mostly by anglers. Pulling in behind the car, I noticed that the license plate was issued to a Purple Heart recipient.

About 80 yards down the narrow path, I spotted an elderly man clad in fishing attire sitting on an old sycamore log. He wore a weathered, tan fishing vest and an old hunter-green felt crusher. Both seemed adorned with about every fly pattern ever made. A senior lifetime license also dangled from his hat. Judging its condition, it must have "weathered many battles" itself. He had extensive scarring on his face and hands. I guessed to myself that they explained the Purple Heart license plate. However, something I anticipated was missing. Except for a fly rod, he clutched only a handmade cane.

Wishing not to startle him, I deliberately scuffed my feet along the path. When he looked my way, I waved and greeted him with my usual, "How's your luck today?" He replied that he'd "just landed number twenty-three!" Somewhat baffled by his response, I said, "Twenty-three at this time of year? You must have some sort of secret." He proudly said, "Oh, I'm only reflecting. I got 'em here over the years. Not one of 'em small, mind you."

He asked me if I had a minute to talk. Then he went on to recount in great detail several catches he'd made at that spot. I soon learned that he was a retired World War II and Korean War veteran who'd recently been told by his doctors that he was losing his battle to cancer and that he had only about three months to live. His grandson, who had driven him to the stream, was "trying to fish just upstream, but he's too busy with all this modern stuff to really appreciate fishing!" His recollections were so vivid that you could almost see the trout bursting out of the water.

His grandson returned 15 minutes later, saying he hadn't had a bite and, "See, I told you this would just be a waste of time!" The old fellow's facial expression betrayed his disappointment. I bid the man farewell, knowing full well "his" fishing trip had been anything but a waste of time.–*WCO James M. Vatter, Westmoreland County.*

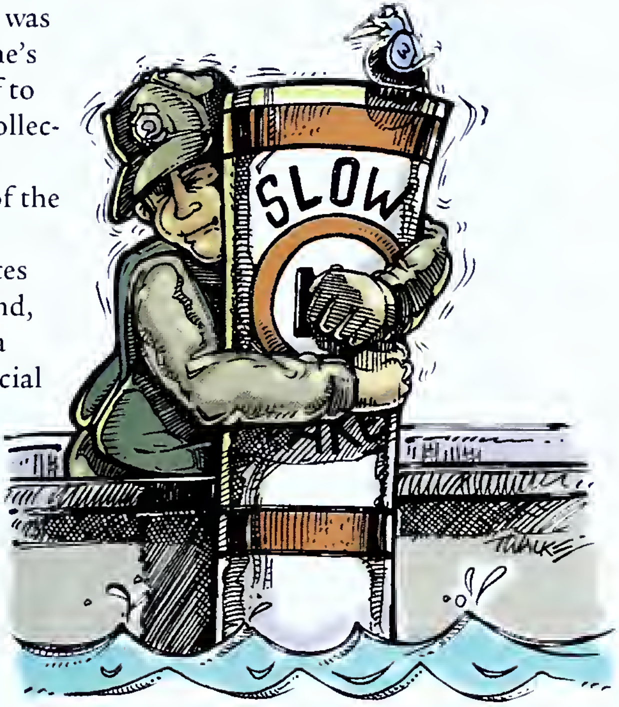
New buoy tool

During my field training, I had the pleasure of being assigned to the Snyder/Union County district for boat-law training. This assignment had me working under the tutelage of WCO Steve Boughter, the district officer. The work included boat patrol on a section of the Susquehanna River. One day during the week that I worked with Steve, our job included placing five no-wake buoys along the public docks at Shikellamy State Park.

Everything went well with loading the buoys on the boat and placing them in the river until we noticed that one of the buoys was out of line. Ever the perfectionist, Steve indicated that he wanted the errant buoy moved back into the proper position so all of the buoys would be in a nice, straight line, thereby attesting to our professionalism and attention to detail.

As he maneuvered the patrol boat into position, I inquired about what state-of-the-art buoy tool the Commission had issued to its field officers for the specific purpose of moving a 40-pound block of concrete on the bottom of the river, attached to a 35-foot chain that is secured to a no-wake buoy. I figured it was some sort of hook/tow device that a highly trained and motivated cadet like me would have the opportunity to use.

Steve chuckled. He then proceeded to instruct me in the theory of the bear hug technique of moving buoys, followed by my hands-on portion of the training. Ten minutes later, there I was, highly polished boots, sharply pressed uniform completely covered in river slime, ready for the day's patrol.–*WCO Bob Wheeler, Western Allegheny County.*



Sore feet

Upon my assignment to Forest County in June 1998, I knew little about my neighboring officers to the south and north of the county. I was aware that they both had very good reputations as hard-working, fair officers. As time passed, I learned that each had served in the military, as I had. I also learned that their particular jobs in the military had possibly affected the types of officers they had become, and that their military experience furthered their reputations. You see, one of them was a fighter pilot, and he is known for being independent and daring. The other worked in an office, and he is known for his discipline and attention to detail. I was just a grunt in the service, so I hope I don't get a reputation for smelling bad and having sore feet.–*WCO William Crisp, Forest County.*

Las Vegas, PA

While patrolling a lake in a neighboring district, I came upon a path that led away from the lake momentarily and into the woods to a secluded fishing spot. As I began to move farther into the wooded area, I could hear a woman almost shouting, "Hit me, hit me." Intrigued, I continued to move cautiously along the path toward the lake, expecting I'm not sure what or worse. As I came nearer to the lake, I spotted a woman holding a fishing rod with the line in the water. With relief and amusement, I observed from a distance. Each time she was unsuccessful and the bobber broke the surface, she called out, "Hit me again."–*WCO Martha A. Mackey, Southern Allegheny County.*

Toll bridge

With warmer weather the ice had melted near the shore on the Lower Lake at Promised Land State Park. The melting had created a gap of open water between the shore and the lake's thicker ice. The situation made it difficult to get out on the lake for ice fishing. One angler solved this problem by bringing along a heavy wooden plank and using it to bridge the open water. Seeing an opportunity to profit from his efforts, he wrote on the plank "donations accepted." His enterprise seemed to pay off. When he returned from fishing, he picked up a dollar bill that a grateful angler had placed on the wooden plank.–*WCO Donald E. Heiner Jr., Southern Pike/Northeast Monroe Counties.*

Two New State Records

The Fish & Boat Commission has named a monstrous black crappie from Tioga County as a new state record for the species. Richard A. Pino, Covington, hooked the record crappie last May 28 using a minnow suspended below a bobber while fishing from a boat at Hammond Lake. The fish weighed 4 pounds, 2.88 ounces and measured just over 19 1/4 inches long. Its girth was 15 7/8 inches.

Pino's fish knocks a 4-pound, 1-ounce crappie from the record books. William S. Gorzelic, Bethlehem, caught that fish in Auburn Dam, Schuylkill County, in 1991.

In addition to establishing a new standard for crappies in the state, Pino's fish broke a "drought." No new state fishing records had been set since 1997, when an 8-pound, 8-ounce smallmouth bass was entered into the books. Throughout most of the 1990s, an average of three new records per year was established.

The Commission also named a brown trout weighing nearly 20 pounds the new state record for that species. The 19-pound, 10-ounce trout was landed last July 4 from Walnut Creek by Fazle Buljubasic, of Erie. Buljubasic was using a minnow while casting from the shoreline wall at the Commission's Walnut Creek Access when the big fish hit. It took him about 20 minutes to land the fish, which measured 32 1/4 inches long with a 22-inch girth.

The new record fish easily surpasses the former mark for brown trout. Leroy Patterson of Huntingdon had held the record since 1993 with a 17-pound, 14.5-ounce brown trout he caught in the Raystown Lake spillway.

To be considered for state-record certification, a fish must be caught using legal means, in season, from Pennsylvania waters open to the public without charge or fee. Fish taken from farm ponds, fee-fishing lakes, ponds or streams or in waters restricted to use by club members or their guests do not qualify. Potential record fish must exceed the established benchmark by at least one ounce, weighed on a certified scale.

Fishin' from the Kitchen

Potato-Crusted Smallmouth Bass

by Wayne Phillips

Topping fish with thinly sliced potatoes produces a dish few will forget.

Ingredients for four servings:

- ☐ About 6-ounce portions per person
- ☐ 3 to 5 thinly sliced small potatoes
- ☐ Salt and pepper to taste

Roasted red pepper sauce:

- ☐ 2 large red peppers
- ☐ 1 garlic clove, minced
- ☐ 2 to 4 Tbsp. olive oil or half and half
- ☐ 2 tsp. lemon zest
- ☐ Salt and pepper to taste

photo-Wayne Phillips

Procedure

Use a whole fillet, or if using a larger fish, cut a fillet in two pieces. This recipe works best if the pieces of fish you are cooking have a uniform thickness, so overcooking does not occur on parts of the fish. Season fish with salt and pepper. On a vegetable slicer thinly slice potatoes. Saute potato slices on one side until they are golden-brown. Remove potatoes from pan and put on the fish. Saute fish for a minute or two, and then turn. While the fish cooks, quickly arrange the potato slices on the cooked side to look like scales. Saute until the fish is cooked through.

For the sauce, roast the red peppers in a 350-degree oven until they are very soft and browned. Place in a covered bowl and remove the skin once cool. Place in a food processor with all the other ingredients and pulse until sauce is smooth. Using the half and half instead of the olive oil makes for a rich, luscious sauce.

Serve

Make a pool of roasted red pepper sauce and top with the potato-crusted smallmouth bass fillet. If you wish, place a thin band of sauce across the fish as well. Broccoli, asparagus or snow peas are good green vegetable accompaniments. Baked squash or sweet potatoes are naturals with the fish.

Hints

The keys to making this dish spectacular are keeping the potato slices as thin and as even as possible. Slice the potatoes using a vegetable slicer with the blade set for thin slices. Small potatoes with the skin left on make for a better looking finished dish.

Topping

Covering fish with a topping helps keep it moist. Potato slices are starchy and stick to each other as well as the fish. Grated potatoes can be used instead of sliced potatoes. Taking care when turning the fish helps keep the scales on.

Martin Receives National Education Award

Commission Boating Safety Education Manager Daniel G. Martin was chosen for the 2000 Leroy Orvis Memorial Award for Excellence in Boating Education by the Northern Association of Boating Administrators. Martin, a 12-year employee of the Commission, was nominated for his work in developing the Commission's boating safety programs, including creating the Pennsylvania Basic Boating Course, overseeing the agency's boating education and water rescue programs and producing the Commission's award-winning *Boating Handbook*.

In addition to those duties, Martin also serves as the Commission Boating Accident Review Officer. He is the Commission's liaison with other boating groups, such as the U.S. Power Squadrons and the U.S. Coast Guard Auxiliary.

The mission of the Pennsylvania Fish & Boat Commission is to provide fishing and boating opportunities through the protection and management of aquatic resources.

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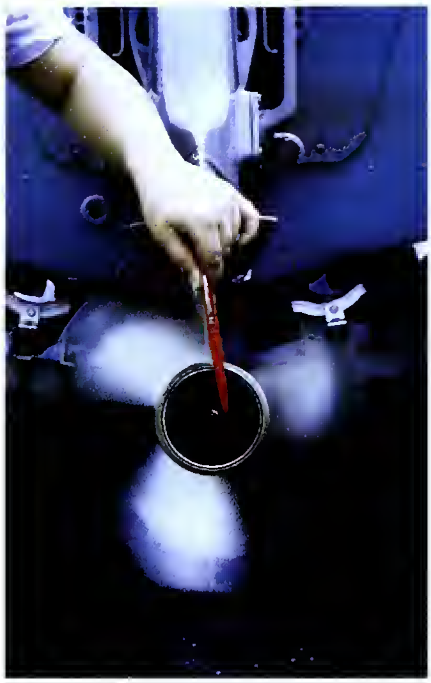
PFBC World Wide Web Site:
www.fish.state.pa.us

Angler's Notebook *by Jon Farley*



Check for a bent prop shaft first by shutting off your outboard and disconnecting the kill switch or spark plugs. Hold a screwdriver or pen up to the prop shaft at the nut as a frame of reference, and with your hand, twirl the prop. The stationary pointed object lets you see the slightest wobble.

Though crankbaits often come with two treble hooks, one is sufficient for most situations. In fact, the second hook can actually do more harm than good because it causes more hang-ups, does more harm to your catch and increases your chances of impaling your fingers when trying to unhook a fish. You can eliminate some of these headaches simply by removing the leading treble hook, leaving just the one at the lure's rear.

As most novice fly fishermen progress, they want to upgrade to a better rod. And it's common knowledge that one thing to look at in a good rod is the overall weight, because lighter rods provide better casting action. However, many anglers overlook the heft of the reel when purchasing a new setup. Matching a lightweight reel to a lightweight rod is important because a heavy reel can hamper the action of a lightweight rod.

Got a big old aluminum soup ladle? If you're an ice fisherman, you can use it as an ice scoop simply by drilling a few holes in the bottom. This homemade version will actually work better than the shallow store-bought kind, which don't hold very much ice. You can always use a small kitchen strainer to remove slush from your ice fishing holes, too.

Spinning reels can give anglers fits when they produce tangles of line that ultimately lead to snarled "bird's nests" of monofilament. You can avoid this by constantly glancing down at your reel while fishing to see if a loop of line has come off the spool. If you see this occur, do not try to "cast it out." This just leads to bigger problems. Instead, remove the spool and unwind the line by hand until the loop comes out.

photo-Art Michaels

Remembering Fish Warden Raymond L. Schroll

Last May 15, a special remembrance ceremony was held in Washington, D.C. as new names were added to those engraved on the National Law Enforcement Officers Memorial. Included on the list of names added at this year's dedication was Pennsylvania Fish Warden Raymond Leroy Schroll Jr.

photo-Commission President Ted Keir

Commission representatives placed this wreath at the memorial's inscription of Officer Schroll's name.

On April 4, 1958, Schroll, the Lycoming County District Fish Warden, and Paul Ranck, a Game Commission officer, were patrolling the Susquehanna River below Williamsport. It had been a wet spring and the river was unusually high and swift. The two officers were returning from checking the duck hatch from Muncy to Williamsport when the swift water became too much for the small craft to handle. The boat capsized, throwing both Officer Schroll and Officer Ranck into the river. Officer Schroll was an excellent swimmer and quickly made it safely to shore. As he exited the water, he turned and saw Officer Ranck clinging to the overturned boat. Without hesitating, Officer Schroll dived back into the water in an attempt to assist his friend. Witnesses say he was gaining on Officer Ranck when Officer Schroll suddenly disappeared under the raging water.

Officer Ranck clung to the boat for over a mile before he was rescued by a volunteer fireman who threw a rope from a bridge over the river. Recovery teams searched unsuccessfully for Officer Schroll in the following few weeks. His body was recovered April 28, 1958, in Lewisburg, PA, over 30 miles downstream.

Witnesses say Officer Schroll had saved his own life and was out of danger. He didn't have to return to the water, but he saw a fellow officer in trouble and instinctively responded. Officer Raymond Schroll is a genuine hero, who unselfishly laid down his life for a friend.

Officer Schroll began his career with the Pennsylvania Fish Commission on June 23, 1952. All who knew him were not surprised by his act of putting his life on the line in an effort to assist a friend in need. Raymond Schroll was respected and greatly admired for his work in his too-short time with the Pennsylvania Fish Commission.

In Honor and Memory of
Warden Raymond L. Schroll Jr.
September 11, 1927 · April 28, 1958

photo-Art Michaels

This memorial plaque is displayed in the Commission's Harrisburg headquarters, with a plaque for the Commission's only other fallen officer, Fish Warden William Shoemaker.

The addition of his name on the National Law Enforcement Officers Memorial was a long-overdue tribute to the ultimate sacrifice by an officer in the line of duty.

The National Law Enforcement Officers Memorial was dedicated in 1991 by President George Bush. It honors all of America's federal, state and local law enforcers. Inscribed on the Memorial's blue-gray marble walls are the names of more than 14,000 officers who have been killed in the line of duty, dating back to the first known death in 1794. Designed by Washington, D.C. architect Davis Buckley, the Memorial is located on three acres of federal park land called Judiciary Square. The site has served for some 200 years as the seat of our nation's judicial branch of government. Bordering the Memorial's beautifully landscaped park are two tree-lined "pathways of remembrance," where the names of the fallen officers are engraved.

For more information about the National Law Enforcement Offices Memorial, visit the web site at **www.nleomf.com/home.html.**

Attending the special remembrance ceremony at the National Law Enforcement Officers Memorial were (clockwise from top left) WCO Lee Creyer, DWCO Bill Fry, WCO Gerald Barton, WCO Alan Robinson, WCO Ray Bednarchik, Linda Schroll McHenry (daughter of Officer Schroll), Jean Schroll Mirto (Officer Schroll's spouse) and Jeffrey Schroll (son of Officer Schroll).

photo-Commission President Ted Keir

New Commission Officers Elected

Ted R. Keir, Athens, Bradford County, was elected president of the Pennsylvania Fish & Boat Commission, and Leon H. Reed Jr., Honesdale, Wayne County, was elected vice-president at the agency's summer quarterly meeting July 24 in Harrisburg.

Commissioner Keir was appointed to the Commission in 1997. Before his retirement, Keir taught environmental science, conservation, biology and earth science for 33 years in the Athens Area School District. He has been an outdoor writer for 23 years, covering the waterways of Bradford and Susquehanna counties. An activist in sportsmen and conservation organizations, Commissioner Keir has served as a director and vice-chairman of the Bradford County Conservation District and as a member of many conservation and sportsmen's organizations, including Trout Unlimited, B.A.S.S., the Pennsylvania Outdoor Writers Association and many others.

Commissioner Reed was appointed to the Commission in 1986. A retired mechanical contractor, he is a life member of the Pennsylvania Federation of Sportsmen's Clubs. Over the years, Reed has been actively involved in many conservation and sportsmen's organizations, such as the Wayne County Sportsmen's Association, Wayne County Trap Club and the Old Buck Hunting Club. Reed recently chaired the ad hoc committee overseeing the agency's headquarters building project.

In other business at the meeting, the Commission approved:

- Adding a 1.2-mile section of Piney Creek, Clarion County, from the SR 2016 bridge downstream to 0.2 miles upstream of the SR 0066 bridge, to the Delayed-Harvest, Artificial-Lures-Only program effective January 1, 2001.
- Reverting management of a 0.2-mile section of Fishing Creek, Clinton County, from the upstream bridge on SR 2002 downstream 300 yards to the State Game Lands 295 boundary, under the Trophy-Trout program. Revised management should provide a 2.0-mile section of stream managed under Catch-and-Release and 3.0 miles of stream managed under Trophy-Trout regulations, effective January 1, 2001.
- Adding Minsi Lake, Northampton County, as a Big Bass Special Regulations water, effective January 1, 2001.
- Designating a 9-mile section of the Youghiogheny River, Fayette and Somerset counties, from the confluence with Ramcat Run downstream to the Route 381 Bridge at Ohiopyle, as a water to be managed and regulated under the All-Tackle Trophy-Trout program effective January 1, 2001.
- Designating Beaverdam Run Reservoir, Cambria County, subject to Big Bass Special Regulations and Panfish Enhancement Special Regulations effective immediately.
- Prohibiting the use of goldfish (*Carassius auratus*), comets (*Carassius auratus*), Koi (*Cyprinus carpio*) and common carp (*Cyprinus carpio*) as bait.
- A process for releasing documents pursuant to the state's Right-to-Know Law.
- Final rulemaking defining Boating Safety Education Certificates issued by the Commission, another state, or a Canadian province.
- Final rulemaking removing the requirement for sound-producing devices in unpowered watercraft.
- Proposed rulemaking that would ban the use of personal watercraft on all Delaware River waters within the boundaries of the Upper Delaware Scenic and Recreational River, consistent with federal regulations already adopted by the National Park Service.
- Proposed rulemaking to provide for the wearing of personal flotation devices by persons on boats less than 16 feet in length on Pittsburgh District U.S. Army Corps of Engineers lakes, consistent with regulations already adopted by the Corps.
- Proposing a procedure for assessing civil penalties for failure to comply with Section 3510 of the Fish and Boat Code (relating to marking dams).
- Adopting regulations clarifying the process for acquiring title to boats that are junked, destroyed, lost, stolen or abandoned.
- Clarifying flotation device regulations at lakes Redman and Williams, York County.
- Regulations to allow the mailing of a boat registration certificate when the operator is found to be boating without the certificate onboard.
- Amendments relating to vehicles, off-highway vehicles and snowmobiles on Commission property.
- Several administrative amendments clarifying and consolidating current regulations.–*Dan Tredinnick.*

Fighting Every Angler and Boater's Fight

The Pennsylvania Federation of Sportsmen's Clubs (PFSC) was the only conservation or sportsmen's group involved in a court case concerning public access to a portion of the Lehigh River. The case is examined in detail in the article "Lehigh River Court Case Tests Navigability," by Linda Steiner, in the July/August 2000 *PA&B*. The Federation spent more than $60,000 on behalf of what it sees as the public's right to fish and boat in navigable waters. It is fighting every angler and boater's fight, according to the Federation.

"This case is not only about the Lehigh River," said Wayne Roberts, PFSC Executive Director. "It is about the public's right to use all of the Commonwealth's navigable waterways and the beds thereof as public property."

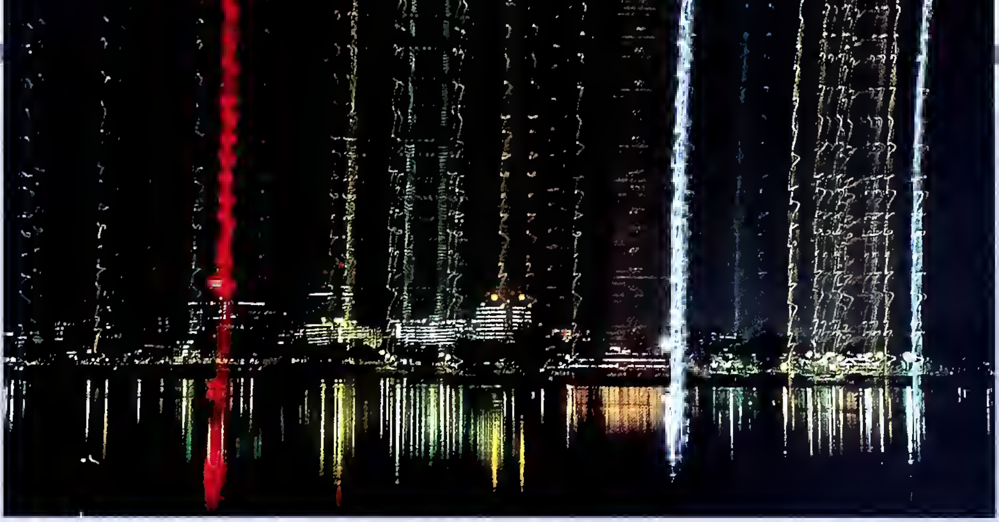
Roberts also said that the case sets a critical precedent for future conflicts and protects the rights of all the citizens of the Commonwealth and their use of public property.

The Federation has been asking the public and its members to help retire the $20,000 debt still owed in the court battle. The Fish & Boat Commission has aided the Federation by arranging for the PFSC Legal Fund to receive a portion of the proceeds of the sale of the collectible Conserve 2000 embroidered patch (if purchased from the Pennsylvania Federation of Sportsmen's Clubs, 2426 North Second St., Harrisburg, PA 17106-7000; (717) 232-3480). The PFSC is also accepting donations marked "PFSC Legal Fund" at the address above.

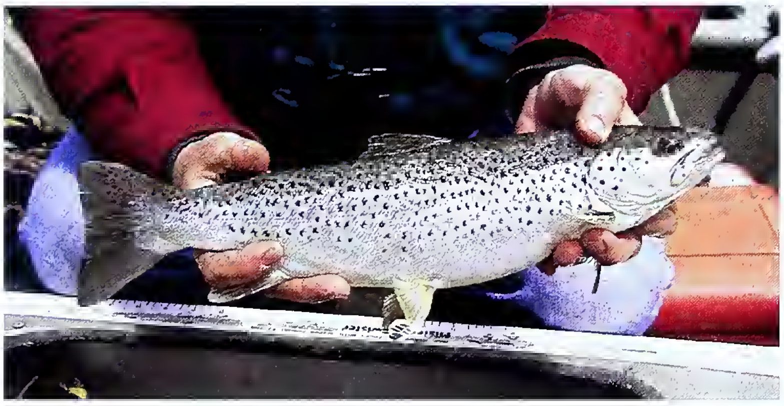
Photo Contest Tips

by Art Michaels

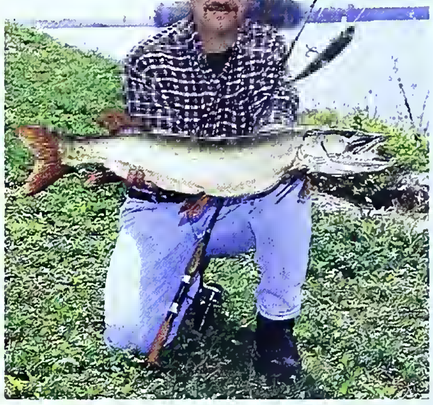
Check the details of the Commission's Photography Contest on page 63! Use these ideas to take some great fishing, boating and waterway photos this season! For more ideas, see the photo tips in the last issue, and check out upcoming issues for more photo tips!



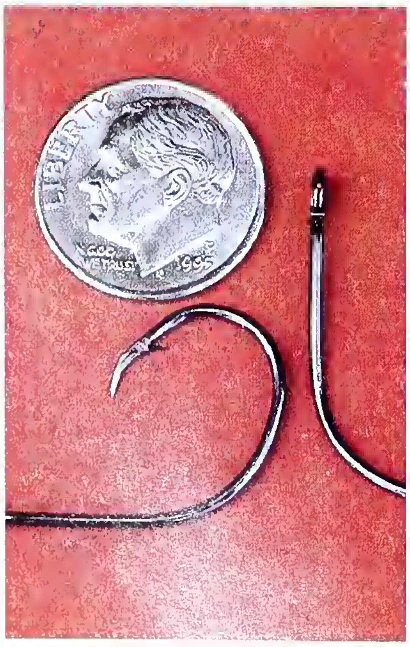
EXPERIMENT.
This photograph is a double exposure. The first exposure captured the city lights. For the second exposure, I repositioned the camera and loosened the tripod head, and when I opened the shutter, I jiggled the tripod head while moving it downward on the vertical axis.
Exposure (each exposure of the same frame): Fuji Provia 100, about 6 seconds at f/5.6.



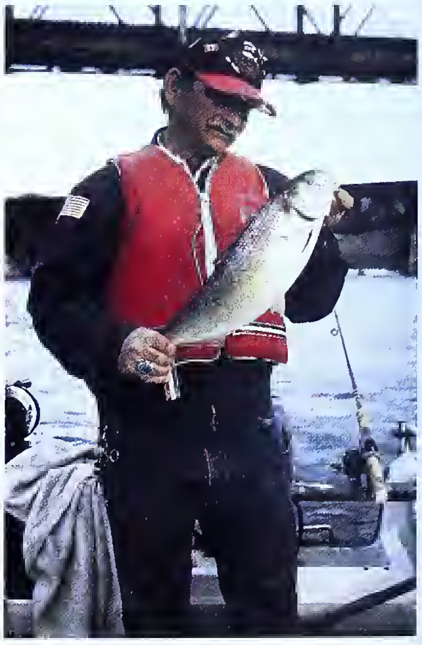
FILL THE FRAME.
Before you take a picture, determine the actual "subject." Then make sure you're close enough to the subject to fill the camera frame–or most of it. When you think you're close enough to the subject, take one step closer and then take the picture.
Exposure: Fuji Provia 100, about $^{1}/_{125}$-second at f/11.



FILL-IN FLASH.
Sunlight can create contrasty pictures with harsh shadows. The high contrast of bright sunlight can fool a camera's exposure meter into darkening sunlit areas in the photograph enough so that dark areas appear completely black. One way to correct this problem when you can't move into the shade is to shoot a daylight shot with flash as if you were taking the picture at night! The flash "fills" the deep shadows with light, creating a more evenly lit picture.
Exposure: Kodak Kodachrome 64, about $^{1}/_{125}$-second at f/5.6 with flash.



EXTREME CLOSEUP.
Taking extreme closeups, called "macro" shots, requires specialized lenses or equipment that's added to a lens (or both in some cases). These items include extension tubes and lens add-ons, called "diopters." An inexpensive way to begin taking macro shots is to use lens sets, which are magnifiers that screw on to the front of a lens. Use a tripod to steady your camera, too.
Exposure: Fuji Provia 100, about $^{1}/_{4}$-second at f/22, 105mm macro lens.



"HERO" SHOT.
Ready to take a picture of someone holding a fish, sometimes called a "hero" shot? Bright shade and bright overcast skies provide even lighting. There are no harsh (extremely dark) shadows and no extremely light (washed out) areas. The diffuse lighting of bright shade can produce pleasing pictures, so move the subject into the shade when you can.
Exposure: Fuji Provia 100, about $^{1}/_{125}$-second at f/5.6.

photo-Ted Walke

Year 2000 PFBC Photography Contest

PICTURE THIS! Your photograph in *Pennsylvania Angler & Boater* Magazine, in Commission publications, on the Commission's web site, and on Commission exhibits!

The Year 2000 Pennsylvania Fish & Boat Commission Photography Contest is intended to foster a greater appreciation for Pennsylvania's fishing and boating, and aquatic resources.

Contest winners will be determined by a panel of judges chosen by the PA Fish & Boat Commission. Photographs will be rated on qualities including composition, originality, visual appeal and adherence to contest rules. First-, second- and third-place winners, and honorable mention winners, may be selected in each category.

Contest winners and honorable mention winners will receive a certificate. Winners will also receive a large-size (6-inch diameter) 10th Anniversary Trout Stamp patch. Honorable Mention winners will receive a year 2000 Trout Stamp patch. Winning entries and honorable mentions may appear in a contest feature article in a future issue of *Pennsylvania Angler & Boater*. All entries may also be used elsewhere in the magazine, on the magazine's cover, in Commission publications, on the Commission's web site, and in Commission exhibits.

The contest will run from January 1, 2000, through December 1, 2000. Winners are scheduled to be announced during an awards presentation at the January 2001 Commission meeting.

Rules

- The contest is open to amateur photographers (anyone who makes less than half one's annual income from taking and/or selling photographs).
- Entries must be original works taken in Pennsylvania, and they must have been taken by the person entering the contest.
- Entries must also show adherence to Pennsylvania fishing and boating laws and regulations.
- In photographs all boaters, and anglers in boats, must be wearing properly fitted, buttoned and zipped life jackets.
- Entrants may submit only mounted 35mm color slides, color prints in sizes 3 1/2"x5", 4"x6", 5"x7", or 8"x10", or unmounted medium-format and large-format transparencies.
- All submissions must be in color–no black-and-white photos.
- All submissions must be original–no duplicate slides or electronic submissions.
- No mounted, over-matted, framed or glassed prints will be accepted.
- Retouched or electronically manipulated entries are not allowed.
- Please do not send negatives.
- Each photo must include the entrant's name, address, phone number, location of the photograph, and category, in addition to a fully completed official entry form on this page for each category entered.
- Participants are limited to a total of two entries per category. Multiple submissions are allowed, as long as entrants submit no more than two items per category.
- The Pennsylvania Fish & Boat Commission shall have the right to use all submissions for publishing, illustration, World Wide Web display, advertising, trade, exhibitry and promotion, or any other use in any medium for any purpose without compensation.

Entrants who want their materials returned must include a self-addressed, stamped envelope with the right amount of postage and appropriate packaging to safeguard materials. Submissions that do not include return envelopes and postage will not be returned.

Photo Contest Entry Form

www.fish.state.pa.us

Complete this form with each entry and mail to: PFBC Photo Contest, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000. The deadline for the Commission's receiving entries is December 1, 2000.

Entrant's Name: ______________________

Address: ______________________

City: ____________ State: ______ Zip: ______

Phone: ______________________

E-mail (if available): ______________________

Date: ______________________

Signature: ______________________

Categories

☐ 1. Seasonal Fishing and/or Boating
☐ 2. Family Fishing and/or Boating
☐ 3. Reptiles and Amphibians (Animal closeups, or photos with the animals as the primary subject)
☐ 4. Invertebrates (worms, aquatic insects, crustaceans, mussels)
☐ 5. Fishing & Boating Resources (primarily waterway scenic emphasis)

Office use only - Leave blank

Category:Entry #:

This form may be photocopied.

Cast & Caught

Kelsy Richardson, age 8, and her grandpap Carl show off a nice brown trout caught from a lake in Cambria County.

Richard and Mark Finley, Marlton, NJ, show the 12.1-pound channel catfish they caught last September while bass fishing on the Susquehanna River, Bradford County, near the Commission's Terrytown Access. The catfish was 27 inches long. The Finleys released the fish after taking the picture.

Jeff Whitaker, Crafton, hefts the 11-pound, 28½-inch steelhead for which he received a Senior Angler Award. Whitaker caught the fish in Walnut Creek last November.

Shannon McDonald, age 5, shows off the 19-inch, 4-pound largemouth bass she caught last March in a farm pond. She hooked and landed the fish by herself. The bass took a nightcrawler.

Fred Rice, Harrisburg, shows the 5 ¾-pound, 22 ½-inch-long smallmouth bass he caught in the Susquehanna River last November. The fish took a 4-inch stonecat.

CONSERVE 2000

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fts for the anglers and boaters on your list! *page 47*

PROTECT • CONSERVE • ENHANCE

RESOURCE FIRST

Commissioner Inky Moore 1925-2000

Commissioner Enoch S. "Inky" Moore Jr. died at his home in Newville, Cumberland County, on October 15, 2000. He was 75 years old.

Born on July 16, 1925, in Farmingdale, New York, Commissioner Moore was the eldest son in a family of five boys and one girl. He moved to Cumberland County, Pennsylvania in 1947 and married Mary Wiser in May 1949. Inky and Mary celebrated their 50th wedding anniversary in May 1999. He and Mary have four sons and nine grandchildren.

Governor Tom Ridge appointed Inky Moore as the Commissioner from the Sixth District in May 1995. He was reappointed in February 1998. A conservationist and fly fisher of state and national renown, Commissioner Moore's service as a member of the Pennsylvania Fish & Boat Commission was marked by his unparalleled integrity and expertise. He served as Commission president in 1998 and 1999.

Inky's career was marked by an extraordinary commitment to conservation and the protection, conservation and enhancement of Pennsylvania's fishery resources. He recognized that education of youth was the key to the future of conservation, and he was the founder or cofounder of conservation schools, including the Rivers Conservation and Fly Fishing Youth Camp and Cumberland County Junior Conservation School. Inky served as a leader of conservation and sportsmen's organizations, including Trout Unlimited, the Pennsylvania Federation of Sportsmen's Clubs, the Pennsylvania Wildlife Federation, the Brotherhood of the Jungle Cock, Pennsylvania Trout, the Carlisle Fish and Game Association, the Ralph W. Abele Conservation Scholarship Fund, the Scott Eckert Memorial Conservation Scholarship Fund, the Citizens for Letort Environmental Action and Restoration, the Big Spring Fish and Game Association and many others.

At the time of his death, Inky was just as active as ever, taking a lead role on the steering committee organizing a new watershed association for the Conodoguinet Creek Watershed. Inky Moore will be remembered as a true conservation hero. He instilled a love for the outdoors, a passion for fly fishing, and a commitment to conservation in the hundreds, young and old alike, who he taught over the years. He joined with conservation leaders, like Ralph Abele, Maurice Goddard, Len Green, Ken Sink and others, to develop a conservation philosophy and pursue conservation goals. Their generation of conservation giants contributed immeasurably to Pennsylvania's lands, waters, fish and wildlife. He will be sorely missed by all who worked with him over a lifetime of achievement.

On September 23, 2000, conservation organizations and agencies honored Enoch S. "Inky" Moore at ceremonies held at Allenberry Resort in Boiling Springs. Moore was lauded for his lifetime work and dedicated service to the cause of conservation.

Peter A. Colangelo
Executive Director
Pennsylvania Fish & Boat Commission

15th WCO Cadet Class Graduation

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The 15 members of the 15th Waterways Conservation Officer Cadet Class graduated from training at ceremonies held recently at the Fish & Boat Commission's headquarters in Harrisburg. Commission Executive Director Peter A. Colangelo presided over the ceremonies, which marked the completion of a course of training that began more than one year ago. The officers completed Municipal Police Office Training, provided by the Pennsylvania State Police, and Conservation Officer Training, overseen by Guy Bowersox, Assistant to the Director of the Commission Bureau of Law Enforcement. In addition to classroom and practical training at the Commission's H.R. Stackhouse School of Fishery Conservation and Watercraft Safety, the officers completed field training with experienced waterways conservation officers.

The ceremonies began with the presentation of the colors by the Fish & Boat Commission Color Guard and singing of the National Anthem, sung by Sandra Patrick of the Commission's Bureau of Boating & Education. The constitutional oath of office was administered to the new officers by Dennis Guise, Commission Deputy Executive Director and Chief Counsel.

Edward W. Manhart, retired Director of the Bureau of Law Enforcement, gave the graduation message to the 15th WCO Class. Manhart emphasized professionalism as the hallmark of the conservation officer.

Jeffrey A. Barber, President of the 15th Class, gave a response on behalf of the graduating class. WCO Barber's message was followed by presentation of diplomas and credentials by Ted Keir, President of the Commission, and Executive Director Colangelo.

Traditionally, an Academic Achievement Award is presented to the class's highest academic scholar. This year that award was renamed the Edward W. Manhart Academic Achievement Award to recognize Manhart's efforts and achievements in starting and promoting the Commission's excellent training program. The first Edward W. Manhart Academic Achievement Award was presented to WCO Kadin D. Thompson. WCO Joseph P. Russell received the Certificate of Excellence for Firearms Proficiency, achieving a score of 96.10 during firearms training. Special recognition awards were presented to WCOs Joshua O. Roland, Jonathan R. Kay, Jeffrey A. Barber and Thomas J. Crist.

The graduates and their new work assignments are: Jeffrey A. Barber, Northcentral Region; Joseph D. Bryan, Southcentral Crawford/Eastern Mercer Counties; Albert P. Colian, Jr., Southwest Region; Thomas J. Crist, Greene County; David W. Decker, Southeast Region; Thomas H. Edwards, Jr., Northwest Region; Jonathan R. Kay, Butler County; Daniel D. McGuire, Northcentral Region; Richard D. Morder, Southcentral Region; Joshua O. Roland, Lebanon/Southern Dauphin Counties; Joseph P. Russell, Western Crawford County; Mark A. Sweppenhiser, Southeast Region; Kadin D. Thompson, Franklin/Eastern Fulton Counties; Brook R. Tolbert, Southcentral Region; and Eric S. Weredyk, Northern York County.

photos-Art Michaels

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Casting Around

Deputy waterways conservation officers, boating safety instructors, groups in the Cooperative Nursery Program, organizations in the Adopt-a-Stream, Adopt-a-Lake and Adopt-an-Access programs, KARE fishing skills instructors, and E&I Corps members all have something in common. These people and groups are Commission volunteers. The Commission seeks volunteers for many rewarding tasks. If you are interested in exploring volunteer opportunities in the Commission, please read the article that begins on page 17.

With this issue we approach the December 1, 2000, deadline for entering the Commission's Year 2000 Photography Contest. If you haven't entered, please turn to page 63 to check out the rules and application. Special thanks go to all the photographers who have entered so far. Watch *PA&B* for contest results.

You're probably familiar with the Commission's phrase and logo for "Resource First." One part of "Resource First" is the Commission's resource protection efforts. This issue's Conserve 2000 article subject is resource protection, and author Carl Richardson provides a detailed explanation of how the Commission protects the resource. The article concludes the series of magazine features on the Commission's Conserve 2000 topics of major concern. Read the article and you'll see how it also heralds the Commission's 2001 theme, "habitat," and its series of feature articles.

RESOURCE FIRST
PROTECT • CONSERVE • ENHANCE

CONSERVE 2000
PROTECT PENNSYLVANIA'S WATERS

Special thanks also go to Waterways Conservation Officers Jeffrey A. Barber and Thomas H. Edwards Jr., who graduated from the 15th WCO Cadet Class last September. Their article, "Becoming a New-Millennium Waterways Conservation Officer," on page 52, gives us a look into job preparation that many of us have never before seen. Thanks also go to WCO Joe Russell, also a 15th WCO Class graduate, for photographing the training and providing those photographs for the article.

This issue includes the 2001 Sizes, Seasons and Creel Limits Poster on pages 32-33. The poster can be removed from the middle of the magazine for display. To abide by some of the regulations, you have to be able to identify certain fish. The Fish Identification item on pages 19-20 can help.–*Art Michaels, Editor.*

with soy-based ink

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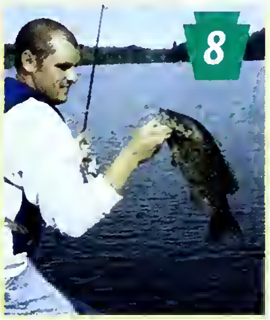

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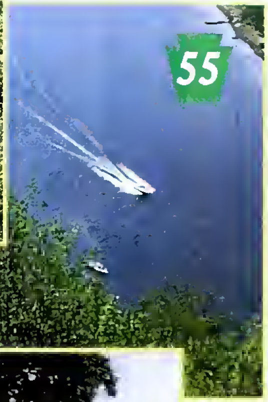
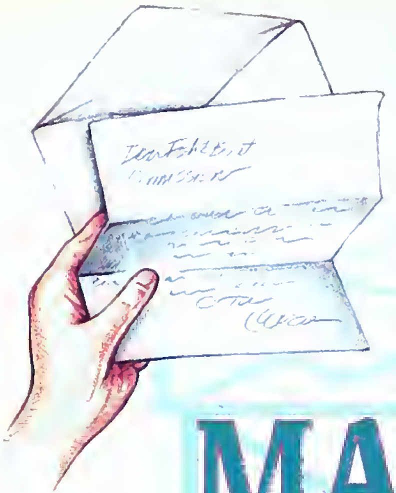


About the cover

The northern pike on this issue's cover, photographed by Jeri Bleech, shows regular contributor Mike Bleech with a nice Allegheny River northern pike.



MAIL

Rockville Bridge

I'm dying to get out and see that stone railroad bridge in the lower-left corner of page 62 in the July/August *PA&B*. Where is it? It almost reminds me of the Rockville Bridge in Harrisburg, but I'm sure the Rockville span is in better shape than the one in the picture.

While I have paper in the typewriter, I should say that I've noticed a heck of an improvement in the magazine over the past two or three years. It's one magazine that never gets to lay around a few days before I pick it up and read it.–*Robert A. Compton, Mertztown.*

Thanks for your kind comments. That bridge is the Rockville Bridge, on the Susquehanna River, just north of Harrisburg.–*Ed.*

Licenses via the Internet

I'd like to comment on a letter in the May/June *PA&B* ("Licenses via the Internet"). The anonymous author seems to be upset because the Commonwealth is spending money to facilitate the online sales of fishing and hunting licenses. I applaud this action by the state.

I didn't buy my fishing license online, but I welcome the opportunity to do so. The convenience makes this mode of purchase attractive to many people. No longer will you have to go to the local department store sporting goods section. No longer will you have to stand in line behind someone who can't make up his mind on what he really wants, and then watch as he doesn't have all the proper identification to make the license purchase. Just a few clicks, a little typing and it's done! Seems like a much more hassle-free process to me.

It's ironic that the letter penned by this anonymous complainer came via the Internet.–*Jerry Moore, via email.*

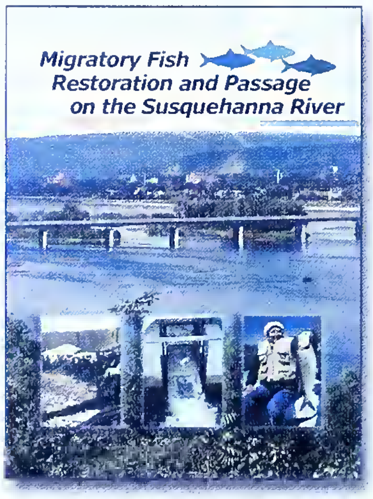
Fish-for-Free Days

First, I would like to extend my thanks to the Fish & Boat Commission for "Fish-for-Free" days. This past June 3, I took my adult daughters to fish at Lake Arthur, Moraine State Park. We rented a pontoon boat and fished about five hours–long enough to keep a dozen nice bluegills. However, although no licenses were needed, the cost of the boat rental (dad's cost) was $150. Is there any way for the Fish & Boat Commission to persuade any of the boat liveries in Pennsylvania to have one or two of their "half price" days to coincide with Fish-for-Free days?–*Bob Ramming, Pittsburgh.*

It's not the Fish & Boat Commission's place to influence private enterprises to conduct business one way or the other. This suggestion is intriguing, though. You might want to mention it to local liveries.–*Ed.*

Shad in the West Branch

I read with interest your 20-page publication *Migratory Fish Restoration and Passage on the Susquehanna River*. There seems to be a question of how far up the West Branch the shad migrated. My grandmother was born in Cambria County in 1871. She often talked about the shad runs. Her father had a grist mill on Chest Creek. One of her jobs as a young girl was to check the fish traps below the mill dam. When the shad were running, her father and neighbors would use pitchforks to remove the shad. They would salt and smoke them so that the fish could be preserved for winter food.


Migratory Fish
Restoration and Passage
on the Susquehanna River

She told me that later, when glass canning jars were available, her mother would can the fish. That way the bones were cooked and they could eat the fish without worrying about all the bones. She often talked about how bony the shad were. She died in 1954, and my grandfather died in 1972. They told us many stories about growing up in Cambria County.

I hope someday to see the shad runs restored to the headwaters of the West Branch of the Susquehanna River.–*Edward F. Worrall, Bellefonte.*

Your letter regarding historical occurrence of shad in the West Branch of the Susquehanna River was most intriguing to those of us involved in the restoration of American shad in the Susquehanna River basin (see "Migratory Fish Restoration," by Carl Richardson, page 25, May/June 2000 *PA&B*). Is it a coincidence that your last name is the same as that of the first Commissioner of Fisheries, James Worrall, appointed by Governor Curtin in 1866, or are you related?

The years after 1871, when you indicated your grandmother as a young girl was getting shad out of Chest Creek, are consistent with a time when shad would still have been abundant. The methods of preservation that she told you about were typical and widely used; the bony nature of American shad is legendary.

As you know from reading the booklet *Migratory Fish Restoration and Passage on the Susquehanna River*, significant progress has been made in restoring American shad to the Susquehanna River. The year 2000 was a major milestone when York Haven Dam fish passage went into service, joining the other three lower Susquehanna River hydropower dams. These fish passage facilities give migratory fish access to hundreds of miles of upriver habitat with record numbers of shad in the Susquehanna River.

There will be many challenges and significant impediments in restoring American shad to the headwaters of the West Branch of the Susquehanna River. A fish passage facility was installed on

the Hepburn Street Dam in Williamsport in the mid-1980s, and it would provide access as far upstream as Lock Haven. As I am sure you are aware, however, acid mine drainage has a significant effect on the aquatic life in the West Branch upstream of Lock Haven. Assuming that in the future acid mine drainage abatement is successful in returning healthy aquatic life to the West Branch, there are four dams for which fish passage would have to be provided. Citizen activists and local officials at Lock Haven have indicated a strong interest in fish passage at the relatively low Grant Street Dam. Farther up the West Branch, there is a second low dam at Shawville electric power plant and a third low dam in Clearfield, and provision for fish passage at the Army Corp of Engineers dam at Curwensville would be a major and costly undertaking. Conquering all of these challenges would be necessary to get shad to Chest Creek.

Many people never thought the shad restoration effort would ever have achieved the success seen so far, and we will continue to make progress. Shad at Chest Creek? Who knows–it will take an enduring commitment from everyone to abate acid mine drainage, restore water quality and provide passageways for the fish. Still, it could happen.

Thank you very much for sharing your grandmother's recollection of American shad in Chest Creek. We are always interested in new information about the historical occurrence of migratory fish in Pennsylvania.–*Rick Hoopes, Chief, Division of Research.*

Chauncy Lively

I heard that Chauncy Lively passed away. Is it true? If so, when will *Pennsylvania Angler & Boater* print an article in his memory? His fly tying articles were priceless to me and I'm sure to many others as well. He illustrated the most simplified methods that even the newest tier could follow. His passing will be a loss to many. I looked to every issue for his directions and recommended his pages to my friends. What a loss to all who loved to tie and fish his patterns. Please print a history of Chauncy, about his life and love for tying and fishing. I regret that I never corresponded to thank him for his greatness. To me he was a great, quiet man who was blessed with a skill that exceeded many of his writings. I cut out his articles and filed them for reference. I'll miss his pages and his easy-to-follow instructions. Please publish a picture of Chauncy so I know more of him. His passing is my loss. He will leave a void for so many of us.–*Al Stutenroth, Carlisle.*

Your sentiments are those of most Pennsylvania anglers. We will publish an article about Chauncy in an upcoming issue.–*Ed.*

Six Mile Run

Six Mile Run is a beautiful small stream flowing through Warren County's forested land, and it has water quality supporting wild brook and brown trout. The stream is also stocked with rainbow trout. It is shameful that by littering, individuals among our ranks have a blatant disregard for the environment, and local residents must plea for them to practice common decency. What can be done to curb such a disrespectful activity like littering?–*Robert D. Winter, Warren.*

The Fish & Boat Commission sympathizes with your fight to curb the problem of littering along our Commonwealth's waters. Unfortunately, from an enforcement perspective, it is difficult to apprehend these violators. We encourage you to gain community support for a stream cleanup day. What has been found with problems such as littering is that when the community is behind programs like litter cleanups, the would-be "litterbugs" will think twice about their actions. If you see a persistent problem or a trouble area, please notify our office of its location and we will look into it further.–*Cadet T. Edwards, Northwest Regional Office.*

Youth camp comment

I was a camper at the Rivers Conservation and Fly Fishing Youth Camp, Cumberland County. I wanted to let you know I really appreciate your taking the time to teach me about water safety while wading. I have to admit that I was always worried about drowning in fast water while fishing, even though I'm a very strong swimmer. You put those fears to rest.–*Sarah Senko, Seneca, PA.*

BACKTALK

Letters

Argue with the Commission. Applaud us. Advise us. The Fish & Boat Commission invites you to write letters to the editor if you have an idea on *PA&B* content; a question or concern about the Commission; something to say about fish and fishing, or boats and boating; or a helpful idea for anglers or boaters. Please hold letters to no more than 200 words. Letters and email to the Commission become the property of the Commission, and they are edited for clarity and space considerations.

Address all correspondence to: Art Michaels, Editor, *Pennsylvania Angler & Boater*, P.O. Box 67000, Harrisburg, PA 17106-7000; or contact the Commission at its web site: **www.fish.state.pa.us.**

Photo contest

If you'd like to see your photographs appear in more than just our "Cast & Caught" feature, you might want to enter your best of the best in the Commission's new photography contest. The contest runs from January 1, 2000, through December 1, 2000, and focuses on five main subject areas. A panel of judges will determine the winners. For complete details, see page 63 of this issue.

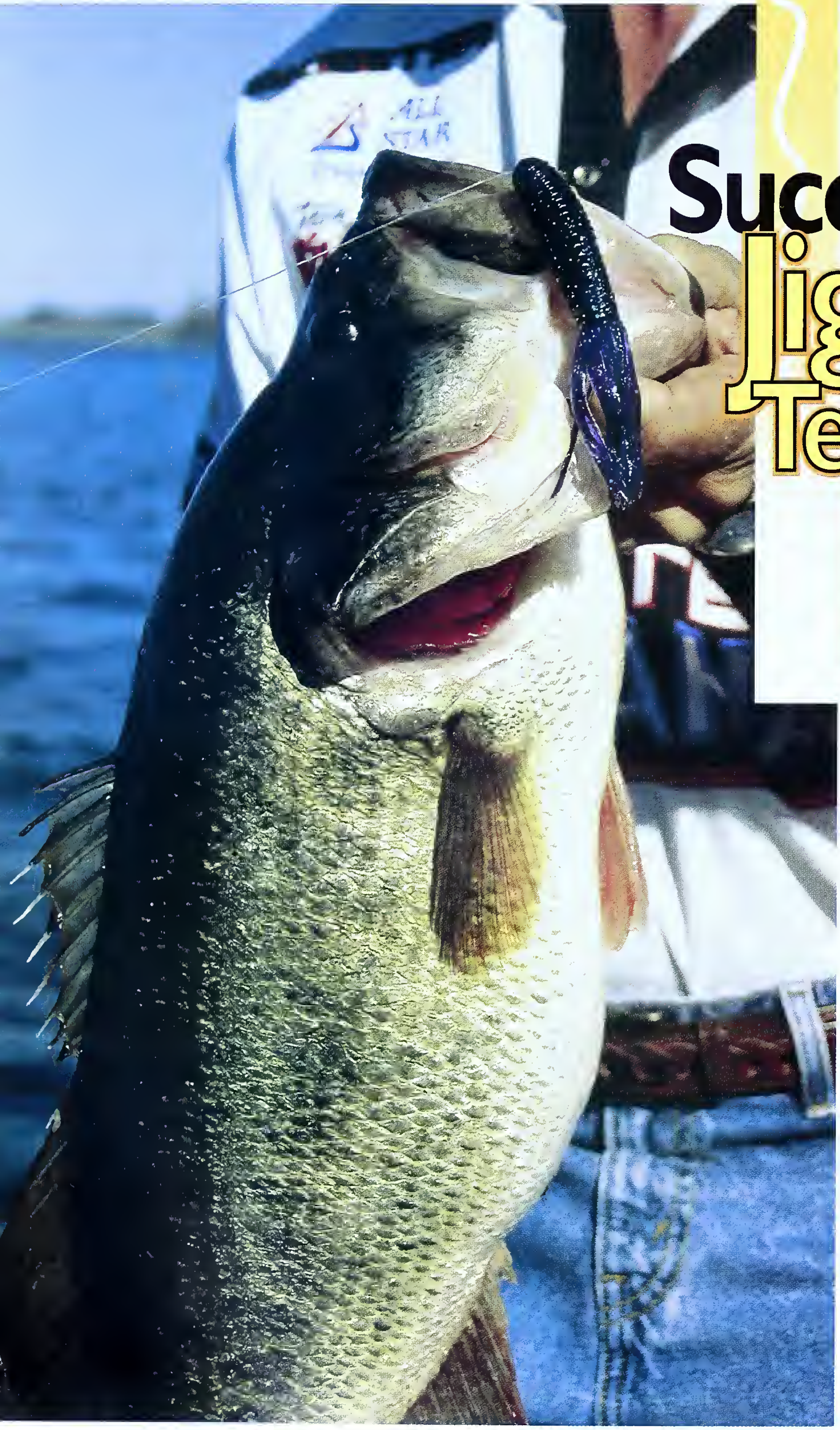


photo-Vic Attardo

Successful Jigging Techniques for Bass

by Vic Attardo

I can't think of a single freshwater gamefish that won't grab a jig. Largemouth and smallmouth bass certainly love them, and most times you can't use a better lure for walleyes and crappies.

I've taken perch, bluegills, pike and pickerel on jigs, and though they're far from my first choice for catfish and carp, I know these leadheaded lures have nabbed both, though usually by accident. Also, if you don't think a jig is a good choice for trout residing in lakes or strong rivers, you keep on thinking that and leave those fish to me.

Admittedly there is really not much to the basic jig design. A head of lead and an embedded hook are the main ingredients. The fancy bits are the shape of the head and what you use for a body and tail.

As far as the head goes, you can press the face flat for a stand-up jig, or you can pinch the sides to make it swim or roll in different ways. For the add-ons, today's choices include plastic and pork trailers, rubber or silicone skirts, bucktail or marabou, and more. Tube jigs, in which the entire head is covered with plastic, have become a hot standard for many bass anglers.

But as deceptively simple as jigs are, they can be complicated to use. In fact, they should be complicated. If your idea of fishing a jig is just bouncing it along the bottom with a monotonous lift-and-fall motion, then you're getting a lot less out of these lures than you could.

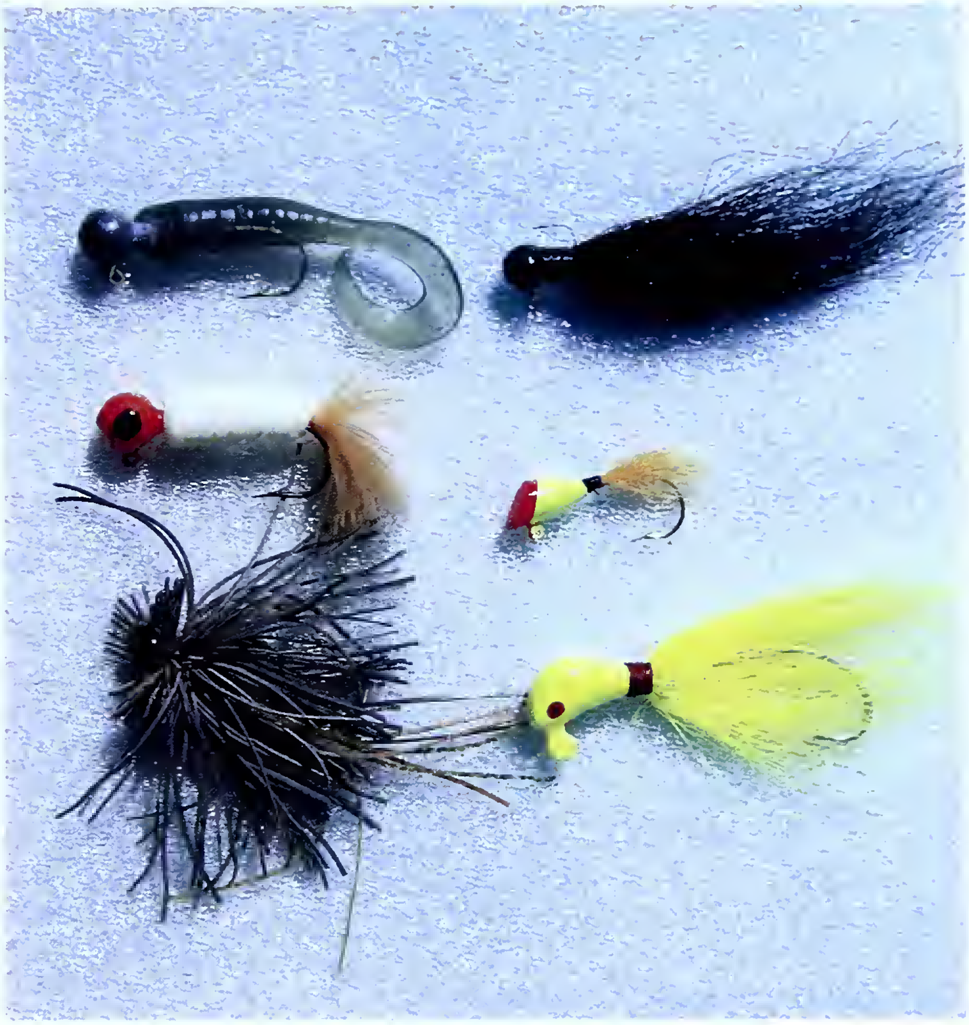


photo-Vic Attardo

Jigs are devastating lures in many conditions. The key to success with jigs is not to think of them as a one-technique bait, but use them in many different ways. This selection shows the variety: (clockwise from top right) Bucktail jig, shad dart, banana jig, stand-up jig, grub, and jig with a smoke trailer.

Treasury of techniques

The first really big largemouth I caught was taken on a jig-and-pig, that is, a jig with a pork trailer shaped like a two-point pendant. Even though I still catch a lot of largemouths with a jig slowly descending next to good cover, making some tactical movements in the retrieve gets me a lot more fish. For instance, in the cold water we can expect at this time of year, a "jiggling" of the jig garners good numbers of bass.

Jiggling entails keeping the lure in place with no forward movement, yet getting it to vibrate on station. Jiggling is accomplished by a rapid oscillation of the rod tip through a very narrow wave length. In other words, you gently shake the rod.

In good jiggling, you vibrate the rod tip an inch or two on a vertical plane. Do not whip the tip. Watch your line where it enters the water. If it's hardly creating a wrinkle on the surface, you probably have it right.

Before we go on, I want to make a lateral pass to say something about line color. For years, I haven't owned a single yard of fluorescent blue/clear line. I wouldn't even fly a kite with that "color" monofilament. These days, a good 75 percent of my fishing is done with clear–completely clear–line. But when it comes to slow presentations, retrieves you do with jigs, or Texas-rigged worms or even natural baits, I now swear by green line. The green, moss-colored line that manufacturers are making has measurably improved my catch rate when the water is clear and the presentation is slow to moderate. Sure, if the water is cloudy or naturally stained, clear line is all you need. But trust me on this one, under the conditions I cited above, use green line.

Another cold-water jigging technique for both largemouth and smallmouth is called, "dragging." "Drag and stop" is a better way to describe the technique I use when the water temperature is 55 degrees or below.

For this technique I prefer a stand-up jig head, one in which the face is angled and dimpled. This type of jig does not lie prone, but instead presents the hook at about 45 degrees.

When the water is cold, I'm fishing for sluggish bass–bass that are probably holding tight to the bottom. These fish don't respond to the lift-and-fall technique of ordinary jigging. Instead, they'll follow a slow-moving bait across the bottom. Sometimes they'll attack when the bait is in motion, but they prefer to grab it when it stops.

For me, the drag-and-stop technique requires more patience than method. I have to be willing to crawl the jig at a little better than a snail's pace, then occasionally stop and wait. Between drags I pause for 10 or 15 seconds. Then I jiggle the jig, wait a few more seconds, and resume the drag if I don't get a hit.

Successful Jigging Techniques for Bass

photo-Vic Attardo

To keep the crawl slow, I use a reel with a slow gear ratio, 4.4:1 or less. It takes me between 15 and 20 seconds to complete one full turn of the handle. Obviously, I'm not covering a lot of water with this method, so I like to be reasonably sure that bass are in the neighborhood. But don't forget that with cool water temperatures, bass either school up or hold tight to cover. The drag-and-stop technique is good around deep grass, ledges and riprap. Also try it if the bass come back into the shallows on a warm fall day.

The Noel way

A condition often faced in fall bass angling is a blustery wind. When it's blowing over 20 mph, I usually stay inside. But a couple of seasons ago I was fishing what started as a decent day with angler Sam Noel when the wind suddenly came up. Fortunately, Noel, a state qualifier in the B.A.S.S. circuit, had a prescription for this trouble. Now, when a breeze blows, I handle it the Noel way.

By mid-morning of our seemingly perfect day, Sam and I were facing whitecaps on the main section of a 535-acre impoundment. Not surprisingly, we moved to a bay where it wasn't quite so bad–at least no whitecaps. I saw Noel switch from a light tube jig to a heavy $^1/_2$-ounce jig-and-pig. The weight, he said, would allow him quickly to penetrate the thick undergrowth of weeds.

As he worked the heavier jig, I noticed that his line did not have the bow, or curve, the wind caused my lighter jig to sustain. Noel was using a casting reel with a fast 6:1 ratio and long 7-foot rod.

"My objective is to get the jig down quickly into the weeds and when a fish strikes, get it out."

As part of his technique, Noel kept his casts short. He was pitching the jig about 15 feet from the bow.

"When it's windy, you can get very close to the fish, and unless you stampede the trolling motor, they won't know you're there."

After Noel pitched the lure, he had the reel back in gear in a flash. He then slowly bounced the jig along the bottom, working the rod between the 10 and 11 o'clock position–a very slight lift and fall.

I often let a little slack develop in my line between jigging motions, but Noel kept a tight line throughout. If he raised the rod to the 12 o'clock position, he said, he'd have to reel down and take up line to set the hook. This he didn't want to do.

Though it's common practice while heavy jigging, Noel did not drop his rod to gather slack before setting the hook. The moment he felt a tick on the line, he snapped his wrists back and the fish was on.

In the final analysis, Noel's lessons for wind jigging include a heavy bait, shorter casts, a long rod, tight line and a quick hook set.

photo-Eric Engbretson

The coin's other side

Then there are days and places where the opposite is true. Perry Haas has won tournament after tournament on Lake Wallenpaupack, no easy feat on such a tough largemouth and smallmouth lake.

To garner these victories, Haas uses a 1/8- or 1/4-ounce skirted jig of his own design. The jig's basic feature is a dimpled, concave head that makes it stand at a 45-degree angle. This position gives the lure the appearance of a crayfish in a defensive posture. The concave bottom also slows the jig's rate of descent, causing it to fall slowly through a suspended strike zone.

Haas fishes his jig in two ways–with the slow lift and fall that most jig anglers use, and with a simple dragging method. In this latter technique, he allows the jig to hit the bottom, but he then points the rod tip at the water, and with a moderate speed skids the bait across the bottom. This style is particularly useful when a big lake is tossed by excessive boat traffic. The boat's own lift and fall causes the jig to have a quick ascent and a gentle descent.

"The type of the retrieve depends on the mood of the fish," Haas told me. "Try different style retrieves until you catch your first fish. Then repeat the same style. One fish doesn't make a pattern, but there's a good chance all of your fish will be caught the same way."

In fishing his jig, Haas also breaks some time-honored rules.

"They always write about keeping in contact with your jig," Haas said. "If keeping in contact means watching the line, that's okay. But if it means keeping the line tight when you drop the jig, it's not."

Haas actually allows the jig to fall beside a dock on a slack line. The line loops off the face of his spinning reel in tight curls and slides across the water's surface.

"When you drop a jig and it hits the bottom, you get slack. But after it stops, if the line again gets extra slack and moves away, you know a bass has sucked it in and is swimming off."

When that occurs, Haas sets the hook hard because if you allow the fish to feel the resistance of the line without setting the hook, the fish will probably spit out the jig.

Go for a swim

Even though it's not a standard cold water-cold weather technique, a method called "swimming" is so overlooked, I'd like to bring it up.

I actually fell into the "swimming" pool by accident. One spring I was fishing for hybrid stripers on Blue Marsh Lake in Berks County, quickly reeling big banana jigs with a thick bucktail body a foot or so under the surface in 53-degree water.

The technique is great on "wipers," but there weren't many silver-sided bass around that day. Instead, I caught two largemouth and one smallmouth totaling about nine pounds. They whacked the banana-head jig as I cranked a 5.3:1 reel at full speed. Since then I've been swimming big-headed jigs with good results in both the early spring to mid-spring and early fall to mid-fall periods.

Basically, there is nothing to it–cast and reel, cast and reel. Sometimes I pause during the retrieve, but that hasn't been a big trigger. I actually swim the jig out in open water with a series of fan casts. It's not a technique I stick with all day, but when I see a long-distance rise, I fling a 1/2-ounce jig past the target and see what happens.

In the spring, when baitfish are very small, don't neglect shad darts. I like to swim or drag darts, depending on the bottom structure. Shad darts catch a lot of smallmouths in rivers.

Jigs are devastating lures in many conditions. The key to success with jigs is not to think of them as a one-technique bait, but use them in many different ways. ⬠

DEEP THOUGHTS on Fall Crappies

by Mike Bleech

“What a beautiful day,” Worth Hammond sighed. Clouds stood out against a medium-blue sky. A mild breeze made the 55-degree temperature perfectly balmy. Even though most of the leaves on the surrounding hillsides had turned colors, most of the leaves along the shoreline were still green except for a few that had turned crimson and gold, filling the scenery with just about every color imaginable.

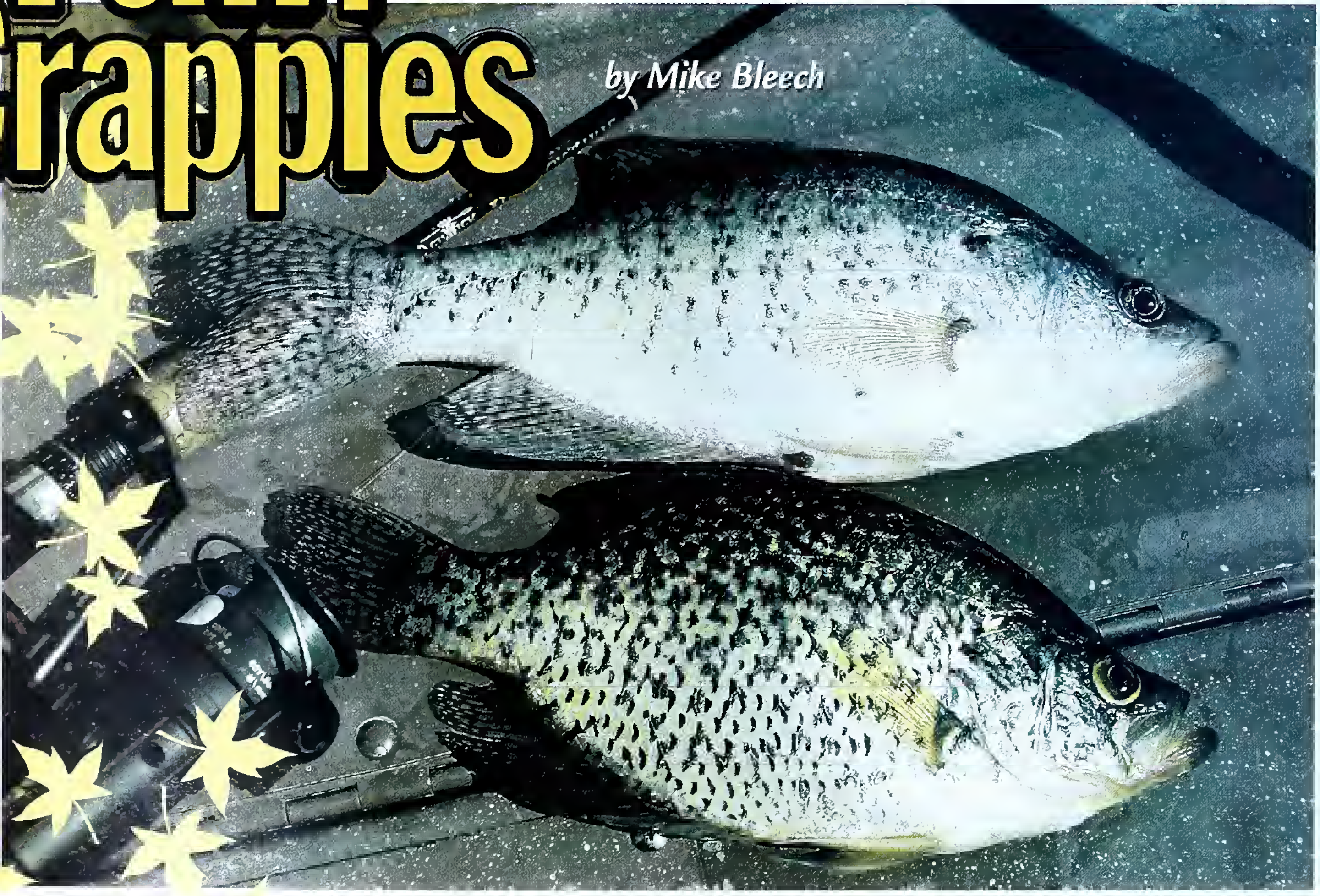


photo-Mike Bleech

Most anglers consider crappies to be shallow-water fish. They are actually deep-water fish from summer through late winter.

photo-Mike Bleech

We motored slowly in a zig-zag pattern, watching the sonar screen intently. Just after rounding a major point, with a bottom reading of 20 to 26 feet, an obvious dropoff, fish signals began to appear at a depth range of 16 to 20 feet. I cut the gas motor and Worth climbed onto the bow casting platform, lowered the electric motor into the water, and turned the boat 180 degrees to put us back over the fish signals.

I cast across the area where I figured the fish would be, and counted 20 to give my $^1/_{32}$-ounce jig time to sink. When I closed the bail and reeled in the slack line, I was already hooked up. The fish was big enough to put a serious bow in my ultralight jigging rod and make me play the fish cautiously on two-pound-test line.

"Nice crappie," Worth noted when he first glimpsed its broad, silvery side on its journey to the surface.

This spot was good for about a dozen crappies before they lost interest in our jigs. We returned later in the day and caught a few more.

You will not hear much about crappie fishing during fall because most anglers have quit fishing for the year, and because those who do still fish have other things in mind. Another reason so few anglers target crappies during fall is because finding them seems difficult. Most crappie fishing in Pennsylvania is done during spring while crappies are in shallow water.

After spawning, crappies move out of shallow water. Some crappies remain in the weed beds through summer. However, most crappies inhabit deeper water during most of the year. Though crappies are considered to be shallow-water fish by most anglers, actually they are deep-water fish from summer through late winter.

Late winter-spring is considered the peak fishing period for crappies only because it is then that they are most easily accessible.

Searching for crappies

Granted, locating crappies in deep water is more difficult than locating them in shallow water–but not by much. The most critical factor is recognizing potential crappie signals on your sonar screen. Learn to do this, and on a good crappie lake you should have no trouble finding crappies during fall.

Crappie signals show up on your sonar screen better than most gamefish because crappies usually suspend well above the bottom. You should have no trouble separating them from the bottom, as you might have difficulty separating walleyes and bass from the bottom. And crappies are often in groups, so it is not like looking for a needle in a haystack. Instead of appearing like a ball as do shiners or shad, look for several signals on your screen at the same time, typically several feet above the bottom, or even closer to the surface. The individual fish signals will usually not be the inverted "V" shape of larger gamefish, but they will be noticeably larger than the one- or two-pixel marks of baitfish.

Forget about high-speed searching. This distorts the images you see on the sonar screen. Run your boat at about 5

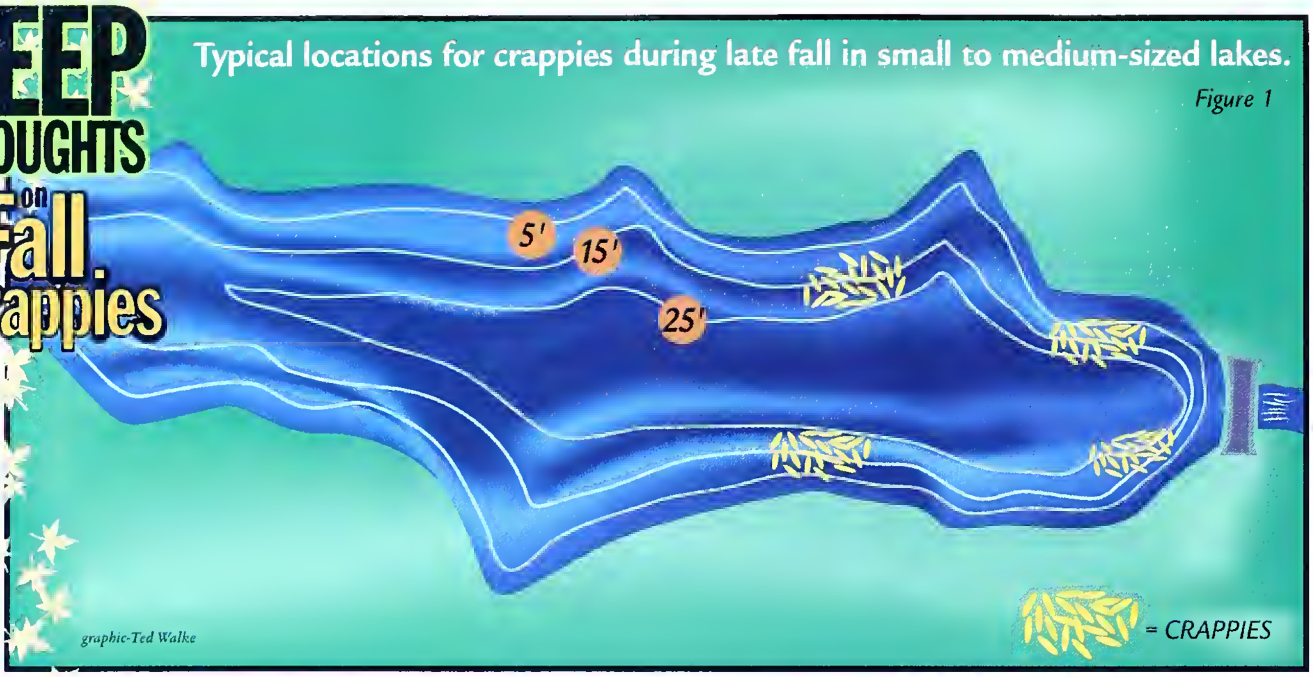

Typical locations for crappies during late fall in small to medium-sized lakes.
Figure 1
5'
15'
25'
= CRAPPIES
graphic-Ted Walke

Figure 1. *Crappies generally move from the shallow head of a lake or reservoir toward the deeper end following the spawn. By fall, they are in the deeper ends of smaller lakes and reservoirs. In this example, a typical Pennsylvania small reservoir, look for crappies near the dam, in the lower third of the reservoir.*

mph while searching, and with the tracking speed of your sonar on high. This plan lets you see the proper perspective of fish signals, that is, how tightly they are grouped.

Start searching where the deepest part of the lake or bay is about 12 feet deep. Then run a zig-zag course down the lake until you begin to detect life on the sonar screen. Even with considerable experience, the best you can do is make an educated guess about the fish that are making the signals on your screen. From this point, drop a bait or jig down to the fish and see what you can catch.

Crappies will likely be in the same places, or at least the same kinds of places, during fall as they are during summer and winter. However, their appearance on a sonar screen will typically be somewhat more scattered during fall than during summer. I suspect this has something to do with feeding conditions. Food is much more abundant during summer than it is during fall.

Last fall at Lake Wilhelm, an 1,860-acre Mercer County lake with abundant crappies, we found that crappies occupied an area, as opposed to a place. During our first visit, crappies were suspended seven to 12 feet beneath the surface over an 18- to 22-foot bottom. With the wind gently pushing us parallel to the shoreline, we could drift for a quarter-mile and catch crappies all the way. As fall progressed toward winter, we found more and more crappies within a mile of the dam, in or just around the deepest water in the lake. Of course, this will probably not be the case in deeper lakes.

Few Pennsylvania lakes are so densely populated with crappies as Lake Wilhelm. The pattern holds true, though, in most lakes of similar size and depth. Look for the crappies in the deeper parts of the lake. In the case of man-made lakes, concentrate your efforts close to the dam, typically in the lower third of the lake. Stay away from those spring or late-ice hotspots in the shallower areas *(see Figure 1)*.

Most lakes have break lines, dropoffs, that are distinctly steeper than the rest of the slope. Crappies tend to hold very close to these break lines. Once you determine a depth pattern, the process of locating more crappies will be much easier because you can just search along the same break line, or break lines, at the same depth.

If you find cover of some sort, so much the better. Sunken logs, stumps or brush piles will almost certainly hold crappies if they are in the right area and at the right depth *(see Figure 2)*.

During a fall perch fishing visit to Tionesta Lake, a 480-acre impoundment in Forest County, with my brother, Greg, we caught an unexpected crappie in mid-channel at a depth of about 20 feet. Circling back with the electric motor, the sonar revealed a sunken log surrounded by many fish signals. We hovered over that log jigging vertically and spent the rest of the morning catching crappies.

Tionesta is only a fair crappie lake. If we had to contend with scattered crappies, it is doubtful that we could catch enough to make a decent meal. But that one piece of cover congregated them enough for reasonably fast fishing.

In larger lakes, Raystown, for example, crappies do not need to move near the dam to get into sufficiently deep water. For simplification, break the lake down into manageable areas such as a single large bay. Then treat this section as you would a smaller lake.

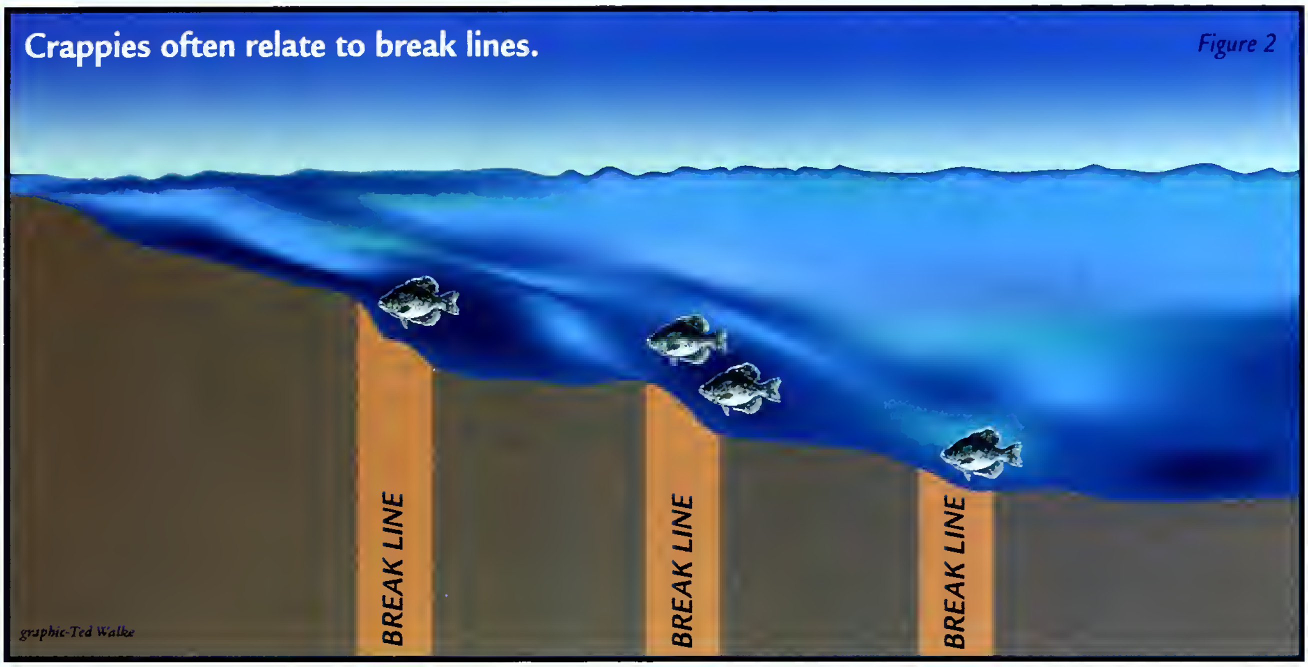
Vertical jigging, slip bobbers

Two methods, vertical jigging and slip bobbers, are perfectly suited to crappie fishing in deep water. Determining which method to use depends on just how deep the water is.

Usually you can position a boat directly over crappies that are in deep water. But first look at the exceptions. In very clear water, crappies might be boat-shy even if they are 10 feet, or more, beneath the surface. Black crappies, which generally inhabit clearer lakes than white crappies, are noticeably more wary than white crappies.

In this case, anchor or maneuver with an electric motor several feet off to the side of the crappies. If there is enough wind or current to move a bobber, position the boat so the bobber drifts the longest possible distance through the

Figure 2.
Crappies often hold near depth breaks. During fall, look for them near breaks that are at least 12 feet deep at the bottom. Sometimes they might be as deep as 40 feet. After you locate crappies, look for others at depth breaks at about the same depth.



crappies. A moving bait almost always is more effective than a stationary bait for the simple reason that it is more likely to pass in the vision range of crappies.

The exception to this idea is when the crappies are congregated close to cover, when you want to keep the bait in place. In this case, anchor upwind or upcurrent from the cover.

Whenever you can get right over crappies and make them hit, do it. This is the most accurate way to present bait or lures both horizontally and vertically, and you will hook more of the fish that strike.

You can use the same terminal rigs for vertical fishing or fishing under slip bobbers. In very clear water, when you are fishing over black crappies, and when the crappies are very fussy, use live minnows on a small fine-wire hook. When the water has some color, when the crappies are aggressive, and when you are fishing over white crappies, a colorful leadhead jig tipped with a live minnow or grub will usually out-catch bait on a plain hook because crappies can see the colorful jig from greater distances.

Jigging spoons can be fished under slip bobbers, but they perform best when jigged vertically. One of the biggest advantages of jigging spoons is that they sink fast, so you waste less time. This amounts to considerable time during the course of a day when you are fishing 12 feet and deeper. Leadhead jigs with soft-plastic bodies that weigh $^{1}/_{64}$-ounce to $^{1}/_{16}$-ounce may take 30 seconds or longer to get down to the crappies. A jigging spoon will get down there in a third of that time, or less.

During our last two fall visits to Lake Wilhelm in 1999, experimenting with various terminal rigs showed an interesting change. Jigging spoons tipped with minnows had been very effective. But crappies showed little interest in them during the last fall fishing trip. On that trip, we did not get fast action until we switched to tiny teardrop jigs tipped with maggots. Through many years of crappie fishing, I have come to expect this change in fishing patterns. Crappies tend to respond best to the light action of smaller jigs when the water gets very cold.

Assume that when you locate crappies you can catch at least a few. They tend to be more cooperative than most of our gamefish. You might have to offer them a variety of baits or lures to tempt them into striking. You might have to use very fine-diameter line. You might have to present the bait or lure just right, usually very slowly. And just because you assume that a few can be caught, this does not mean always. My point is that you have to fine-tune your tackle and tactics.

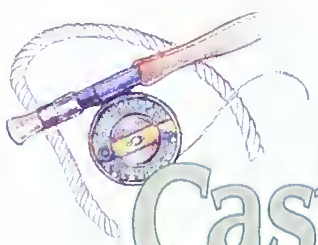
Crappies can be just as fussy as any other fish. However, the odds are very good that if you do your part, some, at least, will cooperate. Use very fine-diameter line, either two-pound-test or four-pound-test. Use a very sensitive rod, or a balanced slip bobber, to detect light strikes. Carry a well-stocked tackle box, including jigs in several colors and sizes. And carry both minnows and grubs either to tip your jigs or fish alone on a fine-wire hook.

Just because 99 percent of crappie anglers give up on crappies during fall does not mean fishing is poor. It is just different. Take the time to find the crappies and fishing can be just as good as it is during spring.

Correcting Sonar Error

Set your slip bobber or fish vertically to the top of the depth range where your sonar detects crappies. This will correct a misrepresentation of fish signals common to all sonars. Your sonar will reveal fish signals at various depths. But the actual depth range where the crappies are located is probably much smaller than what you see on the sonar. This is caused by the inverted-cone angle of the sonar signal.

A fish at the outer edge of the cone will appear to be deeper than a fish that is directly under the transducer, even though both fish are at precisely the same depth. For example, using a 20-degree cone angle, crappies that are at a depth of 20 feet will show up at 20 feet on the sonar screen if they are directly beneath the transducer, but they will appear to be at about 23 feet if they are at the outer edge of the cone.



Casting Lines

with Dave Wolf

Time Capsule 2000

Time capsules, I am told, are constructed as a form of record-keeping–something that later in time will be opened to mark an important time in history, one that often reveals the era that has passed. Perhaps the year 2000 is such an important period.

As the clock ticks down to the end of another year, many of us have already forgotten the Y2K bug that threatened to shut down the modern world. Many scrambled to their computers to see if a "crash" did occur–perhaps a world disaster that we were told "might occur."

So we entered 2000 with apprehension. Most of us have not lived during a calendar year with double zeros.

We may have slipped over the threshold in apprehension, but we cannot forget the way we charged into and through year 2000. The Fish & Boat Commission changed the creel limit for trout from the 1900s limit of eight to five per day. Again, an uprising was expected by some, but it was not forthcoming.

Anglers seemed to enjoy the creel reduction in the belief that it would help better our natural resources...a sign of the times?

"Clean and Green" has swept through the state like wildfire. It seems we have an enlightened public, because state and private organizations have made efforts to "educate" in deeper-reaching methods than ever before. It goes beyond the fact that the funding has surfaced like a rising trout on glassy waters.

The building blocks had been under construction for years, but fruition is found in this special year. "Conservation" and "environment" are now the buzz words, and the humming is growing louder as the year ticks down.

Bass fishing has been allowed during the spawning period with emphasis on catch and release. In fact, the entire bass fishing season has been shuffled. Again something new, a change from tradition...a bold step from the past.

Today, there are more watershed associations, partners with the Commission's Adopt-a-Stream program and river watches than ever before. Project funding is moving to the forefront of state government.

The passageway for the American shad has been established on the lower Susquehanna River, and the Fish & Boat Commission reports that a record-setting fish passage year was recorded. Funding for the Waterways Conservation Grants came to the Commission from donations to the Commission's voluntary contribution programs–the Conservation Acquisition Partnership (CAP) and Conserve 2000.

I present this in remembrance of the year past. However, we must all keep in mind that we have a "long row to hoe."

Mentors in fishing and outdoor conservation no longer come as they once had for many. Today's youngsters no longer simply learn how to fish from grandparents or parents. The educational efforts today may come from nearly anyone–from the classroom at school, from mothers, and from moms of others who have come forward to take a stand for the cause.

In this time capsule, we should somehow invest the realization that people have come to learn that it costs money to right environmental and recreational ills–perhaps, more importantly, that we have found the state and federal government willing to help offset that financial burden.

When the time capsule is opened to what we can only assume will be a much more advanced civilization, they may find some folly in our efforts, and they will more than likely snicker at what they view as antiquated ideas and means we tried to use to reach an end. And by then, they may have unlocked secrets still not available with today's technology.

However, they may find a state filled with people willing to pay for the recovery and rebirth of what we have lost. They may find the early stages of a world in full realization that we may have taken more than we have given.

Unselfishly we had sought thoughts and dreams for those to whom we leave this earth. We wanted them to understand the scars we have mended in an effort to make the world a better place. The same generation that wandered through the stages of "self," the same generation that shoved "compliance" and "responsibility" on the back burner and sought "entertainment" at nearly any cost, is the same generation that came forth to right the environmental woes of the state and the world.

Maybe they will note as I have that the trout, bass, muskies, pike, shad and other fish species have not changed, and that when the capsule is opened, we were full of hope that the species were still there for their enjoyment, that the waters were still available for them to fish and that the waterways were safe for boating.

We all maintain our right to disagree on certain issues, and many have come together for a single cause. Most do so in full knowledge that they may not live to see the final results. Others work in the belief that "final results" are not obtainable without a continuing effort.

Were we a selfish society? Maybe. Did we care what we handed down to those who will follow? Yes. Were we wrong? We certainly hope not, and only those who remain will know for sure.

May this year of trepidation and change be as fruitful as we expected. Be assured, however, that along with knowledge and understanding, we also hope that you find and take the time to enjoy–for that was our intention.

Volunteer Opportunities in the Fish & Boat Commission

photo-Art Michaels

The Fish & Boat Commission has opportunities for individuals or groups to volunteer their time and talents–to "give back" and provide service to the community. Each bureau may have separate requirements. Training, uniforms, education, age, allowances and travel expense reimbursement may vary. If you are interested in any of these volunteer opportunities, please contact us. The Fish & Boat Commission can supply you with a Volunteer Application. Complete the application and return it to the Personnel Office. It will be forwarded to the appropriate bureau.

The **KARE Fishing Skills Instructor Program** certifies those who wish to present "Fishing Skills and Aquatic Education" classes. KARE (Keystone Aquatic Resource Education) is an environmental education program concerned with water resources. These resources include our streams, lakes, rivers and their aquatic life forms. The PA Department of Education has approved this program for use in schools. The program has materials for all age groups. It is geared toward clubs, youth groups, camps and adult organizations. If you are involved with a youth organization, you might be interested in teaching these classes. The children who complete the classes learn basic aquatic ecology, safety, outdoor manners and conservation. They also learn how to fish. For more information, contact the Bureau of Boating & Education at 717-705-7833.

The **Certified Fishing Skills Instructors Program** promotes responsible fishing skills through the SMART program. Anyone can become a fishing skills instructor. You need not have fishing experience. You just need to have a valid PA fishing license. Rods, reels, tackle and bait can be obtained from the Fish & Boat Commission's regional offices. Training workshops are offered throughout the state. Training can also be given for your specific group. For more information, contact the Bureau of Boating & Education at 717-705-7833.

Deputy waterways conservation officers (DWCOs) work with waterways conservation officers. They help enforce fishing, boating and environmental rules and regulations. The state currently has some 300 volunteers working as DWCOs. The training is extensive and will aid anyone looking for future work in law enforcement. Weekend hours are

photo-WCO Derek Pritts

a must! To apply, you must be a PA resident with a valid PA driver's license. Applicants must be at least 21 years of age and reside in the district where they are interviewed. They must have 20/20 vision (or correctable to 20/20). They must have correct color vision and be able to use firearms with each hand. Applicants need to be able to swim and perform CPR. They will engage in strenuous activity, and must not have any criminal record. All applications to become a DWCO should be mailed to the regional manager of the county where the applicant resides.

The **Volunteer Education and Information (E&I) Corps** was established to assist and supplement Commission staff by educating and informing the public about Commission activities. The E&I Corps also provides services such as teaching fishing skills. Members lead casting activities for children, give presentations for civic groups and teach fishing skills. The E&I Corps also works exhibits and provides information to the public. All volunteers in the E&I Corps are reimbursed for mileage used on their private vehicles. They may participate in a Volunteer Incentive Program. The Program rewards volunteer time with points redeemable for gifts. The gifts range from educational resources to life jackets and graphite fly rods and reels. For more information, contact the Bureau of Boating & Education at 717-705-7848.

The **Boating Safety Instructor Program** was established to provide boaters with practical information. This instruction allows boaters to make more informed decisions and become safer boaters. Instructors for both classroom and in-water programs are needed. Courses include PA Basic Boating and PA Boating and Water Safety Awareness. Personal Watercraft (PWC) and Boating Safety Education Certifications are also offered. Instructors teach classroom and in-water boating courses. These classes are given to adult and youth groups. Volunteers are eligible for the Volunteer Incentive Program and are reimbursed for mileage. For more information, contact the Bureau of Boating & Education at 717-705-7833.

photo-Dan Martin

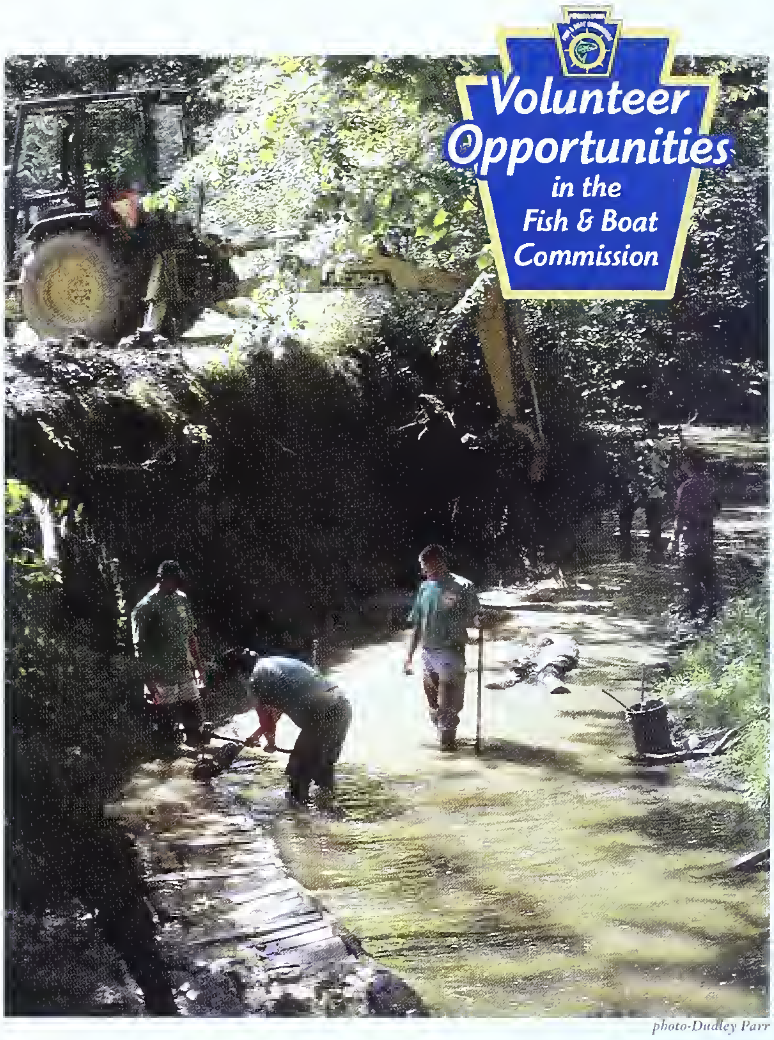


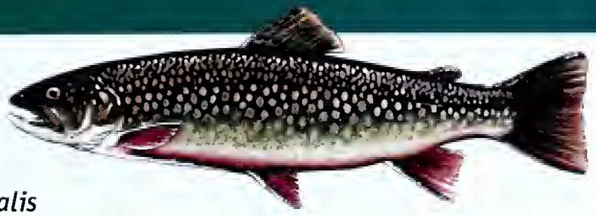
photo-Dudley Parr

The Habitat Management section manages programs called **Adopt-a-Stream** and **Adopt-a-Lake.** These activities are well-suited to groups and organizations. They include one-time events and continuing projects. Local groups sponsor cleanups and fish habitat improvement projects, usually on a nearby waterway. The groups may also volunteer for specialty work, such as preventing stream bank erosion. Commission employees work directly with volunteers. We help investigate, initiate, administer and design projects. Assistance is given to co-manage fisheries habitat improvement projects. We also help develop restoration projects on PA waterways. For more information, contact the Habitat Management Section at 814-359-5185.

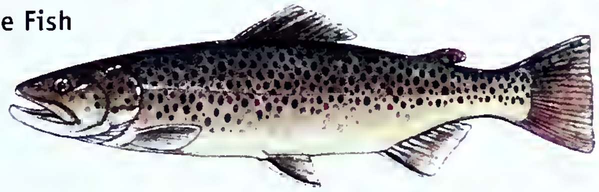
Adopt-an-Access. Many access areas are controlled by the Commission. This program can be used by a variety of groups. The groups simply adopt an access area and maintain it. Volunteers include school groups, scouts, civic groups and senior citizen groups. Volunteers keep the access area clean and report any violations to the local law enforcement office. Volunteers also conduct any other general maintenance required on the area. For more information, call 814-359-5152.

The **Cooperative Nursery Program** currently involves more than 150 sportsmen's groups. They help the Commission by raising fish at 184 sites across the state. The fish raised are mainly trout. Other groups also raise largemouth bass, walleyes and striped bass. These volunteer groups release the fish they raise into Commonwealth waters that are open to public fishing. For more information, call 814-359-5172.

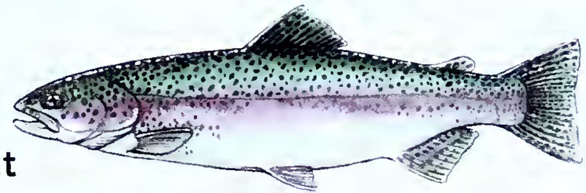
Trout



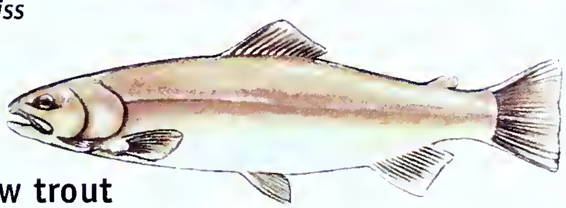
Brook trout
Salvelinus fontinalis
PA's Official State Fish



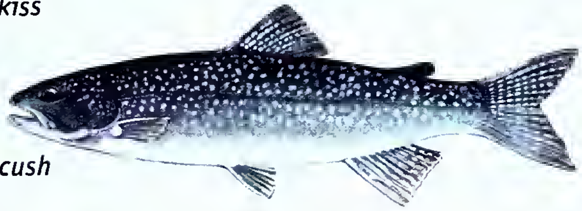
Brown trout
Salmo trutta



Rainbow trout
Oncorhynchus mykiss

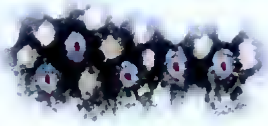


Golden rainbow trout
Oncorhynchus mykiss



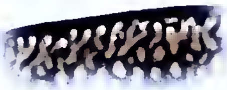
Lake trout
Salvelinus namaycush

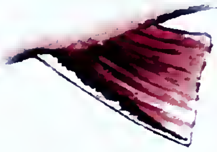
Identification



Brook trout has red spots with bluish halos.

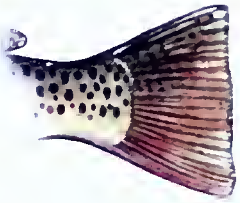
Worm-like pattern (vermiculation) on back.

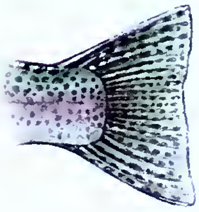




Front edge of fins white or lighter in color.

Brown trout has dark spots, few or none on tail.

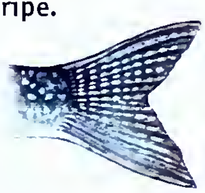




Rainbow trout has dark spots, especially on tail, and a pink lateral stripe.

Golden rainbow trout has deep-yellow or orange coloration. Some have darker gold stripe.

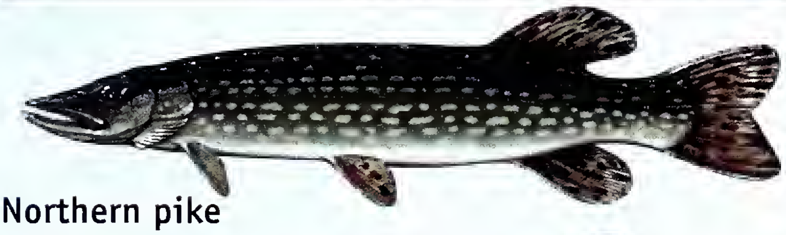
Lake trout has light spots over entire body. Tail deeply forked.



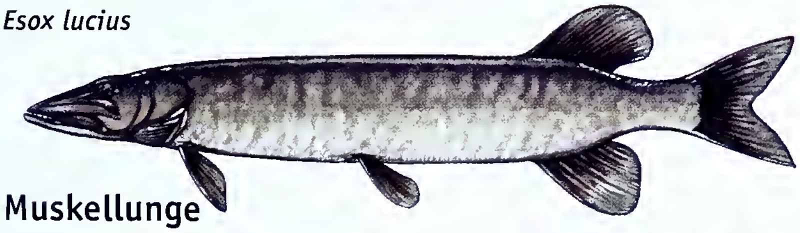
Cut along dotted line and store in your tackle box for easy reference!

illustration-Ted Walke

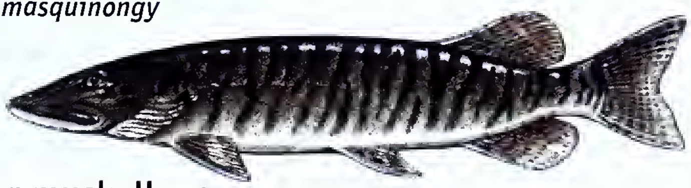
Pike, Muskellunge and Walleyes



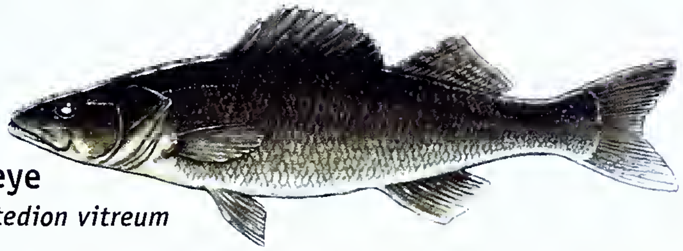
Northern pike
Esox lucius



Muskellunge
Esox masquinongy



Tiger muskellunge
hybrid: *Esox lucius x Esox masquinongy*



Walleye
Stizostedion vitreum

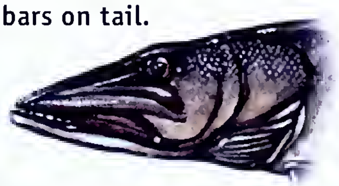
Identification

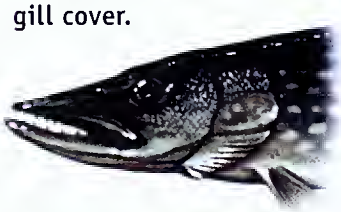
Color patterns

Northern pike has yellow bean-shaped spots on yellow-green to gray-green body.
Muskellunge has light vertical bars or spots.
Tiger muskellunge has dark gray-green bars.
Walleye has yellow body with bars, and spiny rayed and soft-rayed dorsal fin. Walleye has single large spot at base of first dorsal fin. Sauger, often confused with a walleye, has spots on dorsal fin and faint spots or bars on tail.

Scales

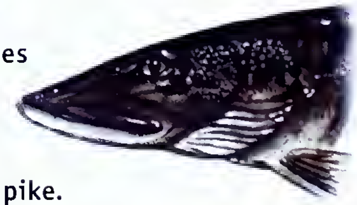
Muskellunge has no scales on lower half of cheek and gill cover.





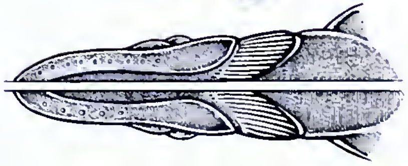
Northern pike has fully scaled cheek with half of the gill cover scaled.

Tiger muskellunge has scales covering two-thirds of the cheek and gill cover area, intermediate between the muskellunge and northern pike.

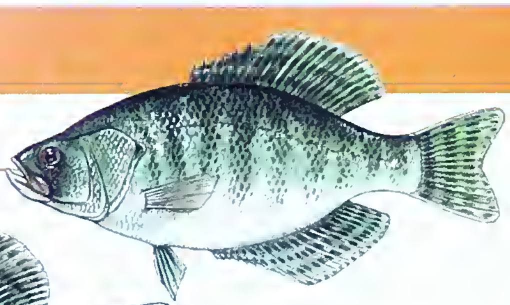


Jaw pores

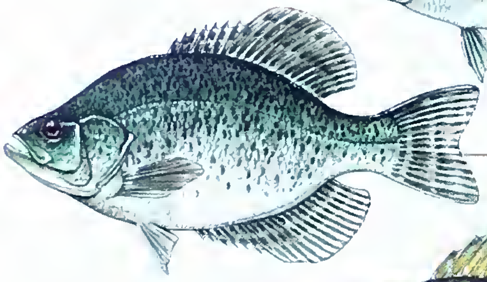
Muskellunge has 6 to 9 pores.
Northern pike has 4 to 5 pores.



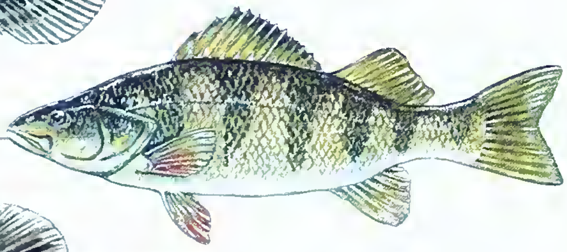
Panfish



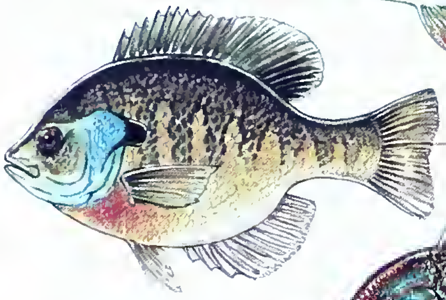
White crappie
Pomoxis annularis



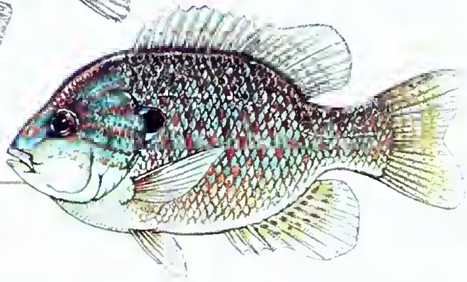
Black crappie
Pomoxis nigromaculatus



Yellow perch
Perca flavescens



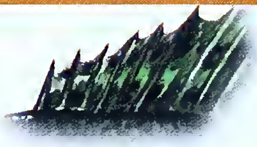
Bluegill
Lepomis macrochirus

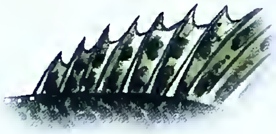


Pumpkinseed
Lepomis gibbosus

Identification

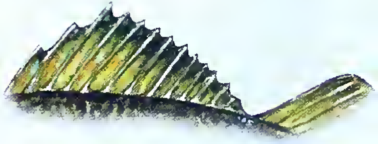
White crappie has head, back and upper sides dark green with 8 to 10 vertical bars. Dorsal fin has 5 to 6 spines.

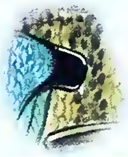




Black crappie has scattered spots and 7 to 8 dorsal spines.

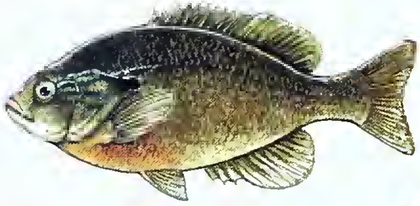
Yellow perch have separate spiny rayed and soft-rayed dorsal fins. Sides have 6 vertical bars.





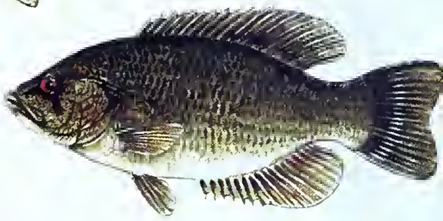
Bluegills have a dark spot at base of dorsal fin. Spiny rayed and soft-rayed dorsal fins are joined. Black spot on gill flap. Dark vertical bars on body.

Other sunfish



Rock bass
Ambloplites rupestris
Red or orange eye, 5 to 7 spines on anal fin, dark mottling over light belly.

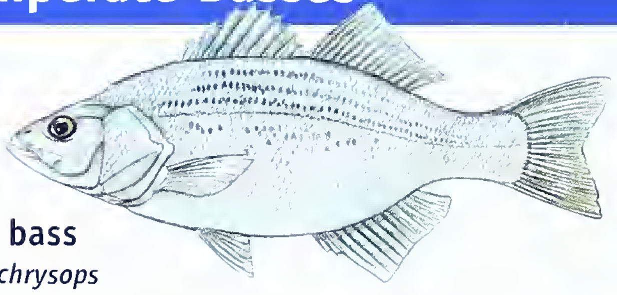
Redbreast sunfish
Lepomis auritus
Long gill cover, short, rounded pectoral fin.



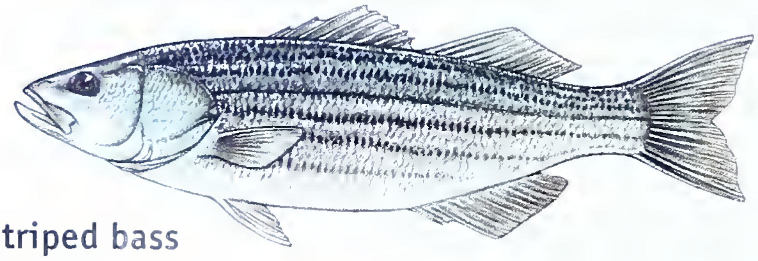
Cut along dotted line and store in your tackle box for easy reference!

illustration-Ted Walke

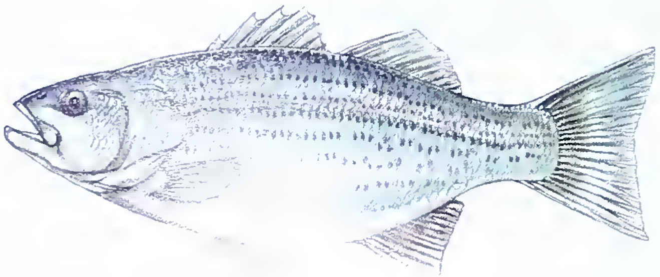
Temperate Basses



White bass
Morone chrysops



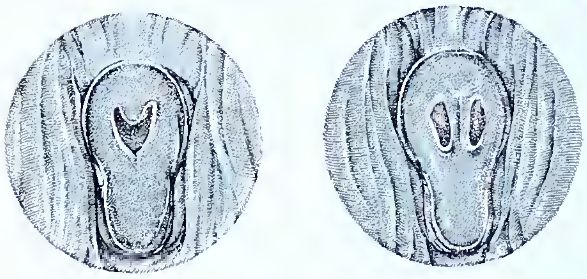
Striped bass
Morone saxatilis



Hybrid striped ba
Morone saxatilis x Moro

Identification

Tooth patches on tongue



White bass has one tooth patch.

Striped bass and striped bass hybrid have two tooth patches.

Scales

Striped bass and white bass have 7 to 9 scale rows above the lateral line. Hybrid striped bass has 10 to 12 scale rows above the lateral line.

Anal fins

White bass has 12 to 13 rays.
Striped bass has 9 to 11 rays.
Hybrid striped bass has 11 to 12 rays.

Stripes

White bass generally lacks vivid dark stripes. Only one vivid stripe gill to tail. Striped bass has 7 to 8 black stripes, usually unbroken gill to tail. Hybrid striped bass has 7 to 8 stripes, usually less distinct and often broken.

Growing Up in Pittsburgh

by Kevin Phillips

photo-Kevin Phillips

Growing up in Pittsburgh during the 1970s, the Monongahela, Allegheny and Ohio rivers were a big part of my life. From the age of 12 to the age of 18, many of my fishing experiences involved the thriving carp and bullhead populations of Pittsburgh's waterways. The poor water quality back then set the stage for plenty of local river jokes, but everybody knew, both fishermen and non-fishermen, that the rivers were loaded with carp and catfish.

Although the bullheads seemed to disappear, carp still are abundant in these urban waters. Only today, carp share the rivers with sought-after fish such as white bass, smallmouth bass, spotted bass, walleyes, saugers and hybrid stripers.

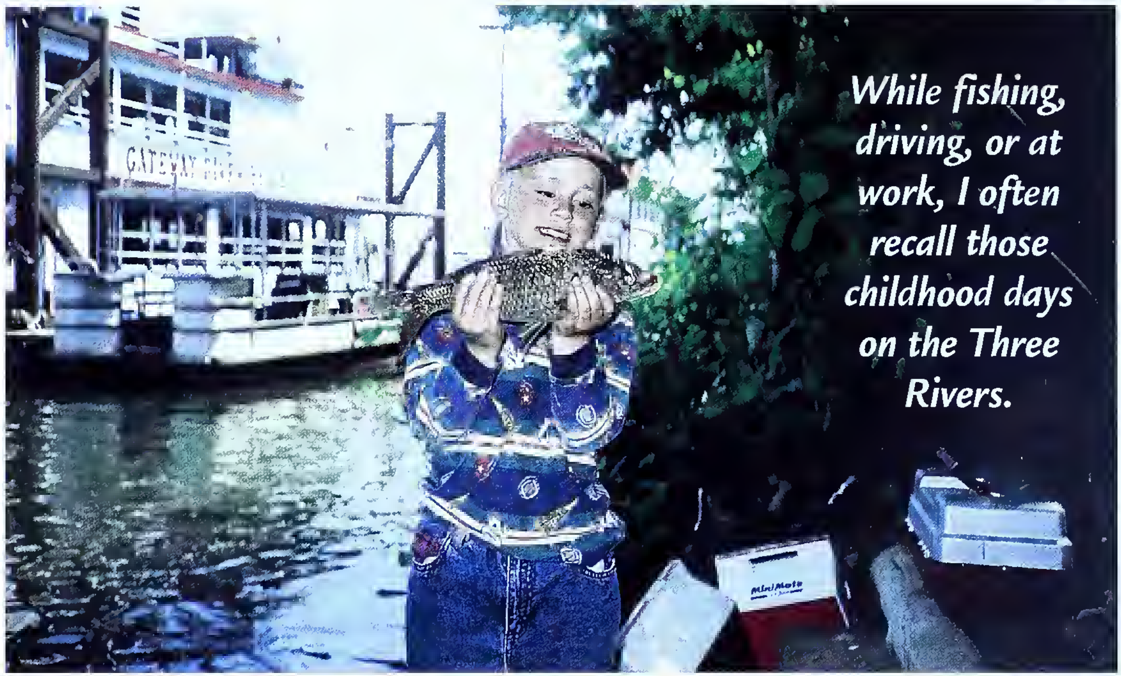
Around the time the city's improving rivers began surprising people, a neighbor of mine held popular, evening shore fishing contests on the "Mon" and Allegheny rivers in Pittsburgh's downtown area. There were two winners in these contests. One was whoever caught the biggest fish, which was always a carp, and the other was whoever caught the biggest "clean-water fish." Anything other than a carp or a catfish from the rivers back then was such a novelty that a five-inch bluegill could also make you a winner.

I can still picture the dried, strawberry doughball in Billy Mooney's hair as we rode a crowded, rush-hour bus home from fishing. It was also Billy who I watched suddenly lose three rods from the powerful bites of nervous carp. Many mornings we would get dropped off near our fishing spots by neighbors on their way to work. On more than a few occasions, the only reason Mr. Woods didn't sleep in was because a gang of young, eager fishermen, outside in the predawn darkness , refused to be denied an early ride to the river. I remember fishing next to the West End Bridge on rainy days when the swollen waters of Saw Mill Run would dump into the Ohio, and how catching three- to six-pounders under those conditions could almost be compared with the ease of catching bluegills off of spawning beds. While fishing, driving, or at work, I often recall those childhood days on the Three Rivers, and sometimes to the point of actually forcing myself to resurrect old river memories.

By the time my son Luke was five, he had enjoyed quite a few good panfish outings, but I was itching for him to tie into a big fish. I wanted him to go to a place where there are lots of big, willing fish with an almost certainty of latching on to one. Luke needed to go where I caught my first big fish. Luke needed to go "down the river."

The Gateway Clipper Fleet was always a carp magnet, but the fleet moved from the Monogahela Parking Wharf, where I fished for carp as a kid, across the river to Pittsburgh's Sta-

Although the bullheads seemed to disappear, carp still are abundant in these urban waters. Only today, carp share the rivers with sought-after fish such as white bass, smallmouth bass, spotted bass, walleyes, saugers and hybrid stripers.



While fishing, driving, or at work, I often recall those childhood days on the Three Rivers.

photo-Kevin Phillips

tion Square Dock. I was unfamiliar with the fleet's new mooring location, so I scoped out the area ahead of time by myself one day. I was looking for more than just a spot to fish, however. I was looking for a spot that was relatively danger-free for Luke and his reckless, worry-free ways. After some poking around, I found a good-looking spot next to a lonely bridge abutment that long ago supported the Wabash Railroad Bridge.

Luke and I arrived at the spot on a beautiful Sunday morning in July, and we had the spot to ourselves. Up to that point, the only fishing Luke knew involved a float and lots of action, so when two hours passed with only one missed bite apiece, he was losing interest watching for a broken stick to rise between two eyelets. He began to amuse himself with sticks and rocks, and by watching some mice scamper around, but when it happened, he was standing right over his rod.

Luke called, "Dad," and I looked over at what strangely appeared to be Luke kicking his rod around. But everything soon became clear when his rod began zipping along the bank toward the river.

Watching a rod race along the bank as a result of a frantic carp bite has always given me an eerie feeling. The biting carp can't be seen, and since fishing line is often difficult to see, my initial thought is always that the rod is mysteriously moving by itself. Deciphering what's really happening never takes long, however, and my eerie feeling quickly gets replaced with one of urgency and excitement.

Seeing my share of faint nibbles that abruptly developed into powerful carp displays and lost rods, I should have known enough for Luke to have a rod holder or at least enough to have his reel bail open. Maybe since I never had one pulled in myself, I felt like I was above such a thing and that this would carry over to my young protege. Today, I am a humbled carp fisherman.

I ran into the shallow water and took a swipe at the rod, but it continued to speed along. I'm not sure what position I ended up in after my failed attempt, but I got one good, final look at the reel before it vanished beyond the dropoff. Strictly relying on that last look, I made some sort of dive into the river, and although my eyes were shut, I was able to grab the shooting rod above the reel. While holding the rod high and working my way back to shore, I yelled that the fish was still on!

Luke just stood on the bank and looked at me, and I could tell that he didn't understand this situation at all. I loosened the drag, handed the rod to Luke, and began to take on the role of a dripping-wet coach. That's "wet" to the point that Luke said, "It's raining, Dad."

After a five-minute battle and a little welcomed assistance from me, Luke happily landed a 24-inch carp.

The carp probably weighed nearly eight pounds. Worried that it might bite him, Luke was hesitant to pose with it. But feeling that harmless, soft mouth helped him build up some nerve, and he became a cooperative model before he smoothly released it.

This short, local outing turned out as I had hoped. Luke got to feel the tug of a big fish, I got some photos, and we had fun. Yet, first big fish and all, snatching that river bottom-bound rod should etch this day a little deeper in our memories. Although memorable, I did my best to explain the potential danger of my reckless action. Here I went out of my way to find a safe, suitable spot to take a small boy "river fishing," and then ironically ended up diving in the Mon after a $25 outfit. This rod incident is nowhere near the list of important things I've done in life, but trivial as it may be, it ranks high on my "most amazing" list.

It's hard to imagine Luke ever as sentimental about Pittsburgh's Three Rivers as I am, and I certainly don't expect it. He does remember this first time carp fishing "down the river," though, and he brings up the day often. That's all the sentiment I need from Luke to make me feel good.

By the time my son Luke was five, he had enjoyed quite a few good panfish outings, but I wanted him to go to a place where there are lots of big, willing fish with an almost certainty of latching on to one. Luke needed to go where I caught my first big fish. Luke needed to go "down the river."

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World's BEST Steelhead River?

by Tim Trainer

photo-Tim Trainer

Ed Trainer and the Rev. Mitch Curby have literally fished the world. The duo has pursued gamefish on several continents. From battling bonefish in the Bahamas and shadowing brown trout in New Zealand, to stalking tarpon off the coast of West Africa and hooking grayling in the Yukon wilderness, the two anglers have seen many superior fisheries and have enjoyed a wealth of unique angling experiences.

Based in White Rock, British Columbia, just outside Vancouver, Trainer and Curby claim the Pacific Northwest as their home fishing grounds, with its exciting salmon and steelhead fisheries. Even though most anglers view the big, fast rivers of British Columbia as steelheading heaven, Trainer and Curby thirsted for a taste of Pennsylvania steelhead fishing. Intrigued by published reports of large steelhead runs and furious action on light tackle in the Lake Erie tributary streams, this pair of well-traveled fishing fanatics looked to the northwest corner of the Keystone State as the setting for an entirely different kind of steelhead adventure. Having graciously hosted my brother, John, and me on several fishing trips to British Columbia, "Cousin Ed" and Mitch became our guests for a few days of spring steelhead fishing on Elk Creek during the last week of March 2000.

My brother and I were anxiety-ridden, to say the least, over our deeply felt obligation and responsibility to put these two fishing "heroes" into at least a few Pennsylvania "steelies." Spring can be a bit "iffy" on the Lake Erie tribs. The fish are spawned out, losing much of their pre-spawn weight, and unless you catch the males on the redds early in the spring, when they are most aggressive, finding fish

photo-Tim Trainer

> *"I'd have to say the best steelhead river in the world has got to be Elk Creek! I've never seen so many active steelhead in a stream at one time."*

can sometimes be a challenge. Still, even though the fishing may be a bit slower in the spring than the heavy spawning runs in the fall, fishing pressure is generally much less, so when you find the fish, you pretty much have them to yourself.

Fortunately, we had several days to scout the streams before our guests arrived, which let us locate holding fish. In Erie tribs vernacular, where "low" means near the lake and "high" means near the Interstate 79/McKean Exit hole, we found large numbers of steelhead—interspersed with suckers—holding "medium-high." But perhaps the following anecdote best illustrates the two days spent fishing Elk Creek with our Canadian guests.

If there's one thing Ed Trainer enjoys almost as much as fishing, it's meeting new people and chewing the fat with fellow fishermen. Like most accomplished anglers, Ed can spin a yarn as deftly as a lure, a skill acquired during those long moments we all experience from time to time when the fish just aren't biting. So after spending two days fishing Elk Creek, Ed was browsing the shelves of a local tackle shop, hoping to find a bargain on fly-tying materials, when the proprietor approached him. Having learned of Ed's home turf and fishing exploits, the curious shop owner solicited Ed's opinion on an interesting point by asking the following question: "What's the best steelhead river in the world?"

One may have thought Ed might favor one of the rivers in British Columbia, where he routinely lands wild steelhead larger than 20 pounds.

photo-Tim Trainer

photo-Tim Trainer

Ed took a moment to ponder the proprietor's question, intently considering his vast accumulation of steeheading experiences, before replying, much to the shopkeeper's surprise: "I'd have to say the best steelhead river in the world has got to be Elk Creek! I've never seen so many active steelhead in a stream at one time. Where else can you see close to 50 steelhead suspended in a hole and hook into 25 to 30 fish, many in the 10-pound range, in a single day? Only in Elk Creek."

Action versus potential

Elk Creek tops Trainer and Curby's list of steelhead streams because of the quantity and quality of the fish and the kind of action available with light tackle. Both men have landed wild steelhead over 25 pounds in British Columbia's rivers, but they have both put in countless hours fishing those big waters without as much as a nibble.

"I've had many days in BC without a single bite," recounts Curby, a dedicated fly-fishing purist. "Yes, there's the potential to hook a really big fish, but it's a very workmanlike process with so much big water to cover. I remember a few fellows who were fly fishing the Thompson River, which is known for 20-pound-plus steelies. They spent 12 days fishing and rose a total of two fish. In all that time, two fish came up to look at their flies. They didn't hook a single fish."

In two days on Elk Creek, Ed Trainer and Curby hooked 75 steelhead between them. Trainer used a noodle rod/4-pound-test-spinning-reel combination, and Curby alternated 4-weight and 6-weight fly rod outfits with varying types of sinking lines. When you factor in my fishing luck, and that of my brother, the four of us landed well over 100 steelhead in two days of fishing during what is generally thought to be an "off-peak" time.

Elk Creek tops the list of steelhead streams because of the quantity and quality of the fish and the kind of action available with light tackle. The four anglers mentioned in this article landed well over 100 steelhead in two days of fishing during what is generally thought to be an "off-peak" time.

"Elk Creek's an awesome fishery," Ed recalls. "I'd like to take some of our BC fisheries management specialists to Pennsylvania to see what good programs have to offer. I couldn't believe I was taking 8- to 10-pound fish on such light line and small hooks (sizes 14 and 16). I still can't get over it."

Annual trip

Trainer and Curby hope to make their visit to the Lake Erie tribs an annual event, not only because of the quality of the fishery but also because of the character of the fellow anglers they met along the way.

"I found the camaraderie with strangers to be very refreshing," Curby explains. "We met a lot of friendly guys on the water and enjoyed the conversation as much as the fishing."

So if you encounter these guys on the Lake Erie tribs this spring, stop and chat awhile. You just may realize the opportunity to learn a great deal about steelheading if you do.

Pennsylvania's Northern Pike

by Jeff Knapp

For many Pennsylvania anglers, the northern pike presents a paradox. The species is popular enough to lure sportsmen to the northern reaches of Canada. Yet, when many fishermen bump into pike in the Keystone State, the fish are often given little respect, and some people even see them as a nuisance.

photo-Eric Engbretson

Recently I spoke with Fish & Boat Commission Warmwater/Coolwater Unit Leader Bob Lorantas to discuss the northern pike resource in our state. Among the subjects of our discussion was why more anglers don't take advantage of the sport the northern pike provides.

"Northern pike are top predators, capable of reaching excellent sizes," Lorantas says. "They provide a great deal of opportunity."

According to Lorantas, northern pike are native to the Ohio River and Lake Erie watersheds, like the muskellunge and walleye. The fish may be native to these western Pennsylvania waters, and it has been established in several eastern Commonwealth waters. The Fish & Boat Commission also has a limited stocking program that affects only a handful of lakes.

"If the habitat is available, we stock the lake," Lorantas says. Even though the Commission does maintain fishable populations of pike in such waters, the best northern pike fisheries are mostly self-sustaining.

One of the reasons anglers can be touched with "pike phobia" is the perception that they are detrimental to populations of other species such as largemouth bass. Pike are effective predators, and there's no doubt that given the opportunity they eat young bass. But so do other species such as walleyes and, for that matter, bass. Our waterways are dynamic environments. The status of the species they support is influenced by a wide range of complicated factors. To think that pike severely affect other gamefish populations such as bass to the extent that anglers catch notably fewer bass is not only simplistic, but unlikely as well. Bass numbers do go up and down because of many reasons much more involved than simply a viable northern pike population.

In most Commonwealth waters, pike populations are rarely dense. Populations seem to be somewhat cyclic, however, and when pike numbers are up in one lake, the same seems to hold true for other waters in the region.

"This occurs with most species," Lorantas says. "When conditions are conducive to good reproduction, strong year classes tend to develop. This can happen on a statewide basis. A few years later, as these fish mature, anglers experience better fishing for the given species."

The conditions the fisheries biologist referred to include stable water levels and temperatures during the spawning and hatching period, as well as good early season food sources for young-of-the-year fish.

photo-Jeri Bleech

In terms of the waters stocked with pike by the Commission, Lorantas notes that these lakes "have robust bass populations."

Terminal rigs

Another common complaint about northern pike is that toothy pike have a propensity for "biting off" expensive lures targeted at other species such as bass and walleyes. So if you are going to target northerns, it's best to do so better prepared. Consider several rigging options to prevent bite-offs before taking to the water for pike.

The mention of wire leaders tends to conjure up images of cumbersome, plastic-coated multi-stranded leaders, or heavy single-strand leaders more suited for musky fishing. But pike lures aren't nearly as bulky as heavy models designed for muskies, and they don't require the same strength. You can do just fine fashioning leaders from light, single-strand wire.

Pennsylvania's

Northern Pike

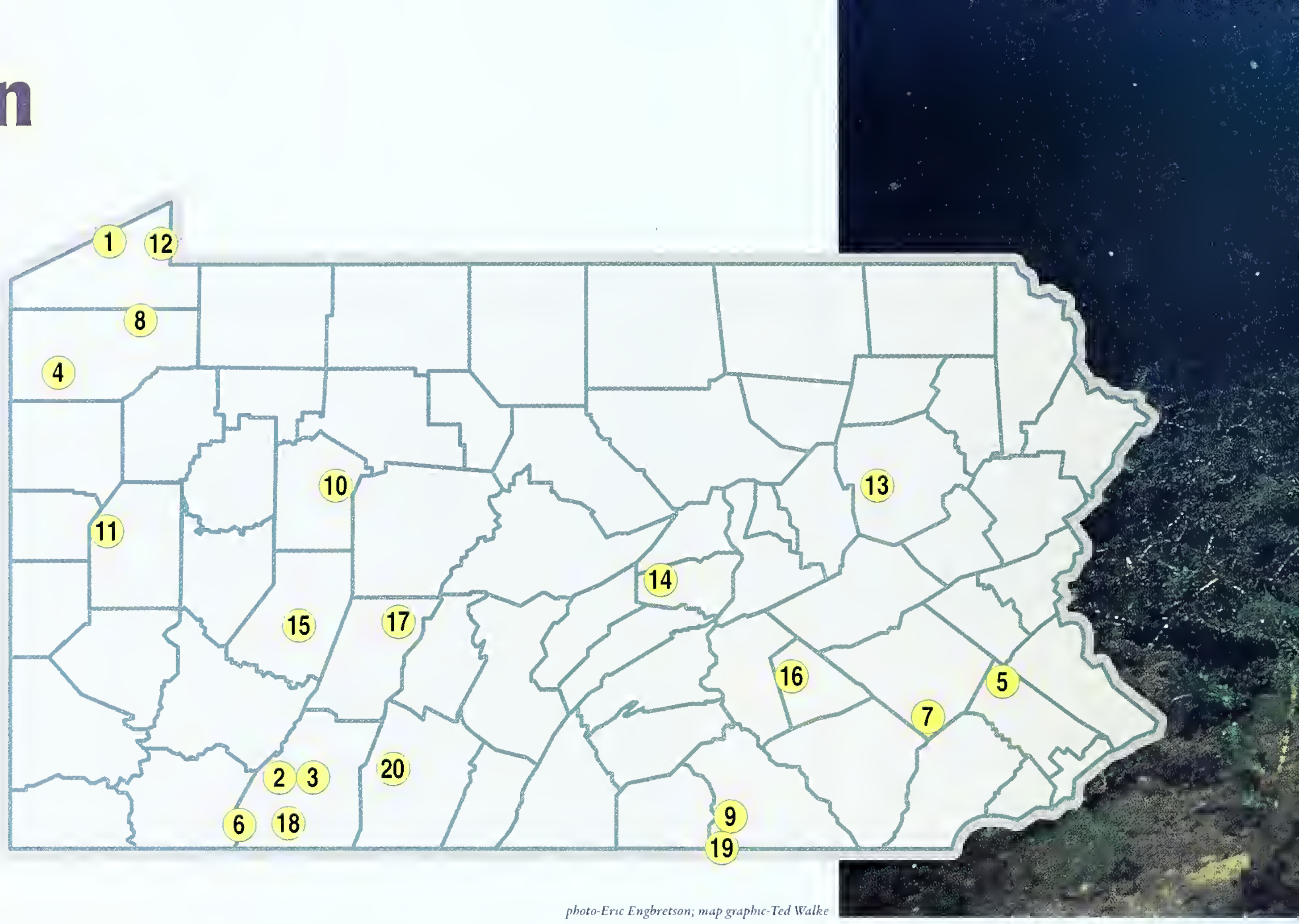


photo-Eric Engbretson; map graphic-Ted Walke

Pike Waters

The following waterways revealed the most abundant northern pike populations in lakes and reservoirs during Fish & Boat Commission trap netting surveys. They are listed in descending order of abundance:

1. Presque Isle Bay
2. Laurel Hill Lake
3. Lake Somerset
4. Conneaut Lake
5. Green Lane Reservoir
6. Youghiogheny River Lake
7. Hopewell Lake, French Creek State Park
8. Canadohta Lake
9. Lake Marburg, Codorus State Park
10. Kyle Lake
11. Lake Arthur, Moraine State Park
12. Eaton Reservoir
13. Lily Lake*
14. Walker Lake*
15. Yellow Creek Lake
16. Memorial Lake
17. Glendale Lake, Prince Gallitzin State Park
18. High Point Lake
19. Long Arm Dam (Sheppard-Meyers Reservoir)
20. Shawnee Lake

* *Waterways that received annual stockings*

Such leaders can be made by using wire snips to cut off about 12 to 18 inches of leader material. Thread about two inches of the wire through an appropriately sized barrel swivel. Clip a forceps to the end of the two-inch piece of wire. Hold the free end of the swivel in one hand, and the opposite end of the leader in the other. Now swing the forceps around the main portion of the leader by using a hand motion similar to jumping rope. The forceps act as a counterweight. Wrap the short end of the wire back around the leader. Stop the swinging motion when all of the tag end has been wrapped. I prefer not to use a snap on the other end of the leader. Instead, I secure the lure directly. Do so using the same method for attaching the swivel.

Before a trip in which I'll be targeting toothy critters, I rig up several lures this way.

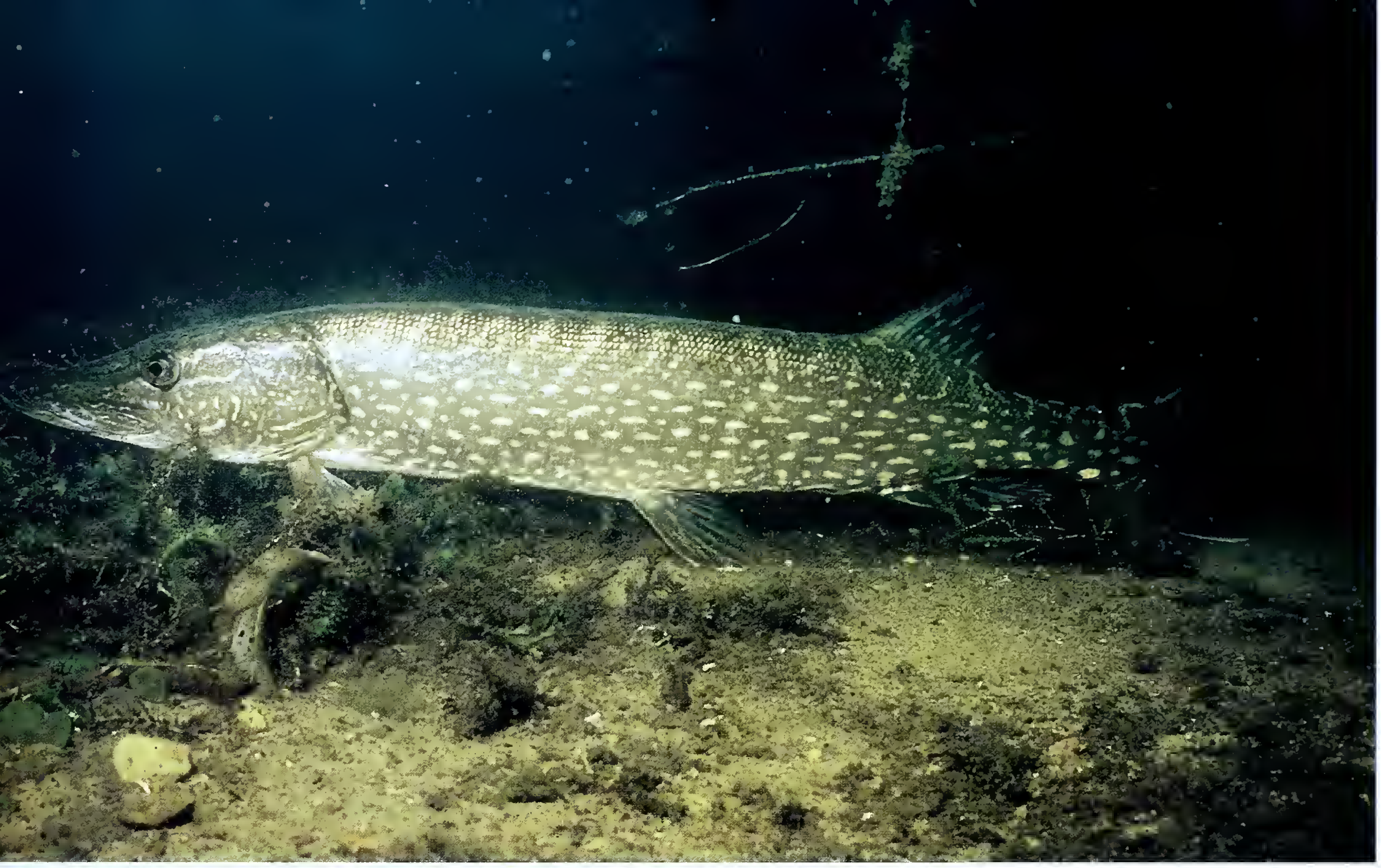
Though many of the new superlines are not especially abrasive-resistant, I know of a least one angler who targets pike and experiences no bite-offs when using such line. He uses a short section of line to tie on his jigs and crankbaits. A barrel swivel is used to connect the main line with the one-foot superline leader.

Pike patterns

Though pike can be caught year-round with a variety of methods, here are a few patterns I've come to identify over the years.

Laydown pike. Laydowns, trees that have tumbled into the water, provide cover for many gamefish. In lakes that hold pike, you can bet they'll be using laydowns much of the year.

The best laydowns seem to drop into fairly deep water. In some reservoirs, these laydowns could have fallen into an old creek channel or along a bluff-type bank.



The best way to fish submerged laydowns is often by holding the boat directly over the cover. Trees are easily identifiable on a sonar unit. By fishing vertically, you can yo-yo a leadhead jig tipped with a minnow down into the cover. If you hold the boat off of the wood and cast into it, it's snag city. Expect to hang up often even when fishing directly over a sunken tree. But if you carefully monitor your lure, staying alert to when it bumps into a branch, you can finesse it in and out of the branches. When you do feel it hang, you can often free it with light shaking instead of rod-bending pulls.

The strike of a pike should be met with a strong hookset that pulls the fish away from the cover. If you give the pike much slack, you'll be buried in the wood.

Another excellent way to fish live bait over sunken laydowns is through the use of a slip bobber. With such a float you can allow an enticing minnow or shiner to hang just above the cover.

Fishing laydowns is an especially effective pattern during the fall.

Flippin' weedlines. Some of the better pike lakes in the state sport excellent amounts of submerged aquatic vegetation, cover such as pondweed, coontail and milfoil. Bass anglers pull largemouths out of pockets in such weed growth by flippin' or pitchin' jigs and soft plastic-bodied lures. If you fish a lake like this that holds decent numbers of pike, chances are excellent you'll tangle with a pike or two.

For targeting pike in such situations, the only real change you need to make is to rig up a handful of jigs with light-wire leaders in the manner previously described. Bass jigs made for flippin' weedy cover need to be heavy so that they penetrate the weeds and offer enough size for a pike. Hold the boat off the weed edge, and work the offering down the outside wall of weeds and into open pockets in the cover. Because it's well into the season by the time most weedbeds fully develop, this method is more of a summertime pattern.

Casting and trolling the top of weeds. During the spring and early summer, before the weedbeds get near or reach the water's surface, working lures over the submerged cover can fool pike cruising for food. This pattern works best over weedy flats, areas that act as food shelves for pike. If the spot is expansive, the best approach is to troll over it. Work smaller flats by fan-casting over the weeds.

For trolling, I like to use shallow-running minnow-shaped lures. The key is to present the lure above the weeds. You don't want to be spending your time constantly cleaning lures, so don't try to drop them right down on the tips of the vegetation. Northern pike roaming the flats tend to be aggressive. They're willing to come up to hit a lure.

Some of the best pike fishing I've had in recent years happened while I worked the weed tops. I caught both pike and walleyes by trolling shallow runners. In this case, I spread out my lures by using a couple of rods rigged with in-line planer boards as outside lines. I trolled inside lines in a standard flatline manner.

Several presentations can be used to fan-cast over weed flats. Suspending stickbaits, a relatively new modification to the family of minnow-shaped lures, is ideal for attaining the right depth when working the tips of weedbeds. A good-sized spinnerbait is also very effective. Don't be afraid to use those loud-colored spinnerbaits that never work well for bass. Pike tend to like hot-colored presentations.

Pike populations in our state seem to be on the upswing. Now's the perfect time to give them a try.

2001 Seasons, Siz

COMMONWE

SPECIES	SEASONS
All species of TROUT and SALMON	Regular Season- April 14 at 8 a.m. to midnight Septem
	Extended Season- All approved trout streams and thei stream areas and all lakes and ponds, January 1 to mid February 28 and September 4 to midnight December
BASS***- Largemouth and Smallmouth and Spotted, all inland waters** LAKES	January 1 to midnight April 13 and November 1 to midnight December 31
	12:01 a.m. on April 14 to midnight June 15
	12:01 a.m. on June 16 to midnight October 31
BASS***- Largemouth and Smallmouth and Spotted, all inland waters** RIVERS AND STREAMS	January 1 to midnight April 13 and October 1 to midnight December 31
	12:01 a.m. on April 14 to midnight June 15
	12:01 a.m. on June 16 to midnight September 30
MUSKELLUNGE and Muskellunge hybrids	January 1 to midnight March 14 and 12:01 a.m. on May 5 to midnight, December 31
PICKEREL****	
PIKE- Northern and Amur	
WALLEYE and hybrids (Saugeye)	
SAUGER	
AMERICAN SHAD	OPEN YEAR-ROUND
AMERICAN SHAD (Lehigh River and tributaries)	OPEN YEAR-ROUND
AMERICAN SHAD***** (Susquehanna River and tributaries)	CLOSED YEAR-ROUND
HICKORY SHAD	CLOSED YEAR-ROUND
HERRING, GIZZARD SHAD*****	OPEN YEAR-ROUND
AMERICAN EEL	OPEN YEAR-ROUND
STRIPED BASS and STRIPED BASS/ WHITE BASS HYBRIDS	OPEN YEAR-ROUND
SUNFISH, YELLOW PERCH, WHITE PERCH, CRAPPIES, CATFISH, ROCK BASS, SUCKERS, CARP, WHITE BASS	OPEN YEAR-ROUND
BAITFISH and FISHBAIT (except mudbugs)	OPEN YEAR-ROUND
AMERICAN EEL (as baitfish)	OPEN YEAR-ROUND
MUDBUGS (dragonfly nymphs)	OPEN YEAR-ROUND
PADDLEFISH	CLOSED YEAR-ROUND

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* Includes the Youghi voir and does not include SPECIAL REGULATION AREAS.
** In the Summary, sc Reservoir and Susquehanna River and tributaries charts for special bass seasons lowing waters within the Susquehanna River Basin.

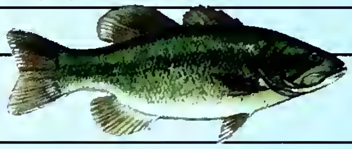
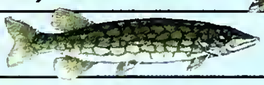
*** Approved trout waters are clos
For purposes of this subsection
**** During the period from 12:0
***** Unlawful to take, catch or k

OPENING DATES TROUT: APRIL 14

s and Creel Limits

LTH INLAND WATERS*

RESOURCE FIRST
PROTECT • CONSERVE • ENHANCE

	MINIMUM SIZE	DAILY LIMIT
r 3	7 inches	5- streams, lakes and ponds (combined species) except areas with special regulations
own- ht	7 inches	3 (combined species) except areas with special regulations
	15 inches	4 (combined species)
	NO HARVEST	Catch and immediate release only (No Tournaments Permitted)
	12 inches	6 (combined species) 
	15 inches	4 (combined species)
	NO HARVEST	Catch and immediate release only (No Tournaments Permitted)
	12 inches	6 (combined species)
	30 inches	2 (combined species)
	15 inches	6 
	24 inches	2 (combined species)
	15 inches	6
	12 inches	6
	no minimum	6
	no minimum	1
	CLOSED	0
	CLOSED	0
	no minimum	50 (combined species) except areas with special regulations
	8 inches	50
	20 inches	2 (combined species)
	no minimum	50 (combined species) except areas with special regulations
	no minimum	50 (combined species)
	6 inches to 8 inches	50
	no minimum	Unlimited if taken from lakes, ponds, swamps, and adjacent areas. 50 per day if taken from moving waters (rivers and streams)
	CLOSED	0

fishing from March 1 to opening day of the regular trout season in April.
ver dam pools and recreational dam pools on the Susquehanna River and navigational dam pools in the Ohio River drainage are "rivers."
n. January 1 to midnight March 14 and 12:01 a.m. December 1 to midnight December 31, the daily limit of pickerel is three.
erican shad, hickory shad, alewife and blueback herring (collectively known as river herring) in the Susquehanna River and its tributaries.

WALLEYE/PIKE: MAY 5 **BASS: JUNE 16**

The Hendrickson Emerger

by Charles R. Meck

When I find an effective pattern that's easy to tie, I use it. Those are my two criteria—the pattern should be productive and relatively easy to tie. This Hendrickson Emerger is such a pattern.

Just what is an emerger pattern and what does it copy? First, let's look at the several stages a typical mayfly goes through in its annual life cycle. Fertilized eggs from a female mayfly spinner are dropped to the water's surface and hatch in about 15 to 20 days. The larvae that emerge from these eggs are called nymphs. These nymphs grow for almost a year underwater. Then, almost at the same time their parents appeared the previous year, the nymphs move toward the surface. At the surface, the nymphs make a hurried transformation. They split their skin dorsally and air-breathing duns with wings pop out. These duns escape to a nearby tree or rock to make the final change to mating adults, or spinners. It's interesting how long each phase of the mayfly life cycle lasts. The egg is 15 days; the nymph, 346; the dun and spinner, two days each.

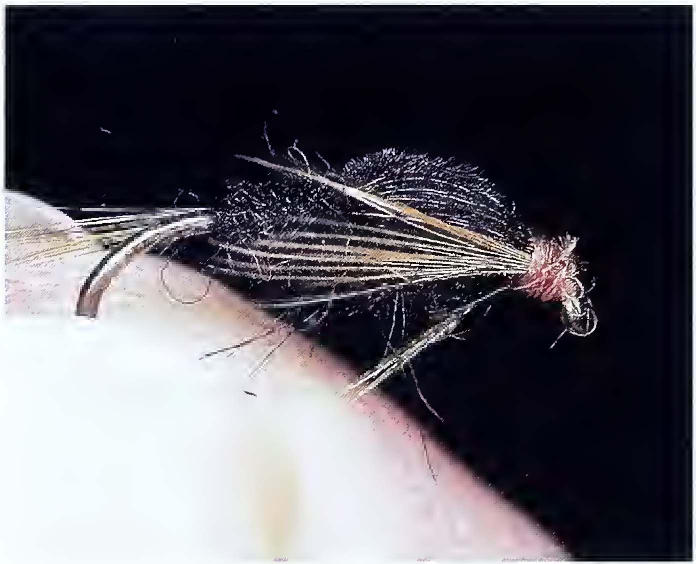


photo-Charles R. Meck

How long is the emerger stage? At most, the emerger stage lasts only a few seconds. The emerger is a nymph that is in the process of changing into an air-breathing dun. The process of change is often very rapid. Other times the change is slow. In all cases, the change—shedding the nymphal skin to become an above-water dun—is dangerous for the nymph.

However long the process takes, trout readily realize that during the change from nymph to dun, the mayfly is vulnerable, and for that split second or so it cannot escape. This is why the emerger pattern is so effective. Anglers often confuse a rise to the emerger as a rise to a dun. More often than not, trout, during a hatch, are taking emergers just under the surface when we assume they're taking duns.

I first found the emerger pattern I describe here while fishing the Cache la Poudre River in Colorado. A fly fisher on that river handed me a pattern he called the Baetis Emerger. I used the emerger pattern that day and did well with it. But one look at the simple method of tying it and I realized how easy this emerger pattern was to use for all the hatches.

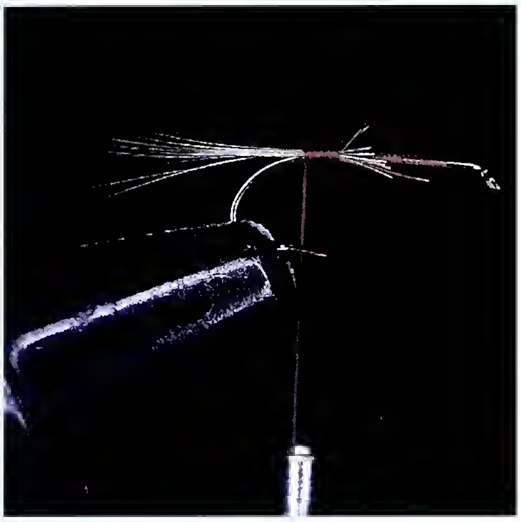
I tied up some Hendrickson Emergers with the same procedure and tested them on several streams across Pennsylvania on an early season trip. I first hit a great hatch of hendricksons and used the new emerger pattern on Oswayo Creek in northern Pennsylvania in late April. I tied the emerger pattern behind a Hendrickson dry fly and fished them in tandem. I tied the emerger pattern 1 1/2 feet behind the dry fly so it sank just beneath the surface. In one riffle in early afternoon, thousands of hendrickson naturals rode the surface. Even though the water temperature that day didn't rise above 52 degrees, more than a dozen trout fed in front of me during the hatch. I cast the tandem combo to the top of the riffle and caught 10 of those trout during that hatch—eight of those trout took the emerger pattern.

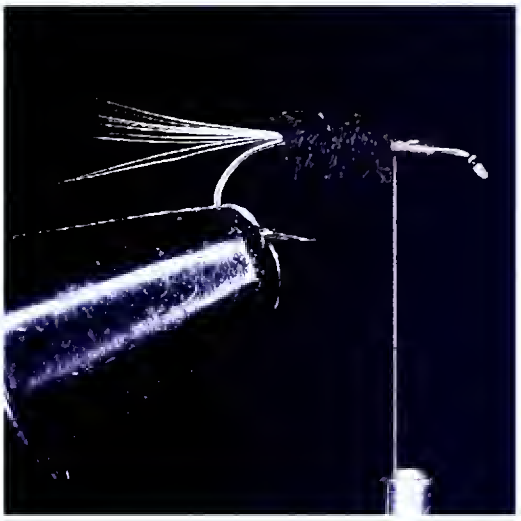
You'll find hendricksons appearing almost statewide from early April on York County's Codorus Creek to late April on streams like the upper part of Pine Creek near Galeton and Tobyhanna Creek in the Poconos.

When you tie this pattern, you'll find it has three parts—a tail, a body and some long hackle that make the wing pad and legs. I most often use a nymph-type hook to tie the pattern so that the emerger pattern sinks just beneath the surface. If you fish the pattern in the tandem rig behind a dry fly, you might want to add several wraps of .010 lead to the body to keep the pattern just beneath the surface.

If you've looked closely at a hendrickson nymph, you've seen an almost black body with light-brown tail and brown hackle and black wing pad. To get the needed color scheme, use a furnace hackle for the combination wing pad and legs. The furnace hackle has a black center and a brown outer part.

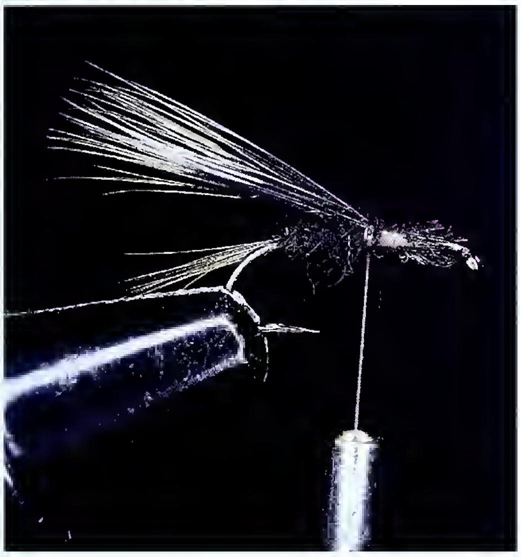
"When I find an effective pattern that's easy to tie, I use it. Those are my two criteria—the pattern should be productive and relatively easy to tie. This Hendrickson Emerger is such a pattern."

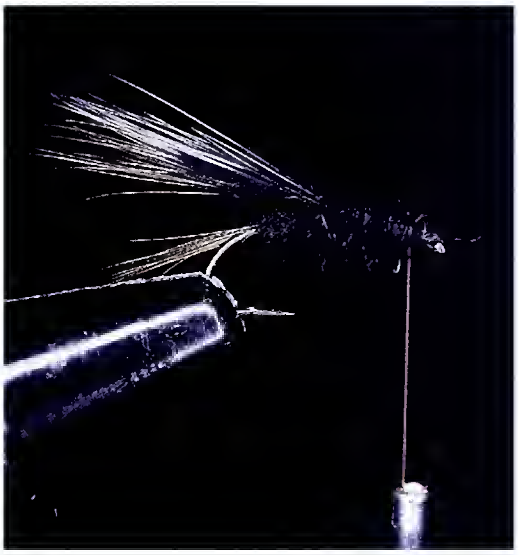




1. Tie in the thread behind the eye and wind back to the bend of the hook. Tie in about a half-dozen soft hackle barbules for the tail. Make a few wraps on top of the barbules' butt section to secure the hackle.

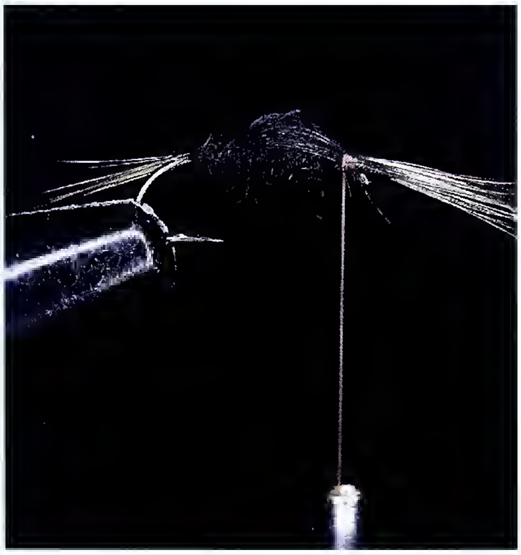
2. Dub some very dark-brown opossum fur onto your tying thread and wrap the dubbing about halfway up the hook shank.

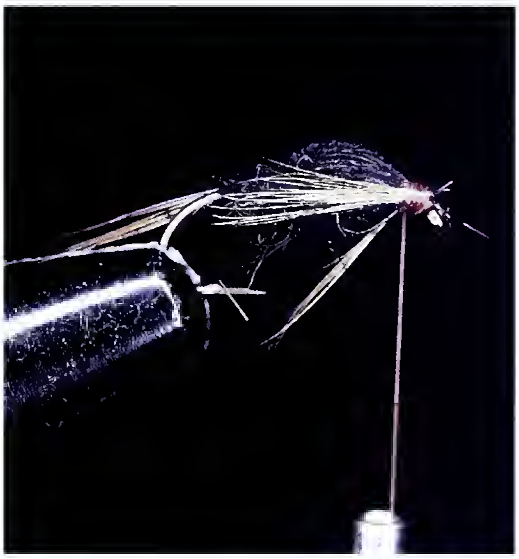




3. Tie in about 10 to 20 long furnace hackle barbules at the middle of the shank, just in front of the completed back half of the body. Tie them in at the butt section and with the tips of the barbules leaning back over the hook bend. These barbules should be $^1/_2$-inch to $^3/_4$-inch long.

4. Dub in the front half of the body with the same dark-brown opossum fur and wind up to just in front of the eye. Dub the front half of the emerger heavier than the rear to suggest a tapered body and to make the burbules give the effect that the dun is emerging out of the nymph.





5. Pull the furnace hackle barbules up over the thorax (front half of the body) and tie them in just behind the eye. Don't cut off the tips.

6. Take about half of the barbule tips and divide them in two, making the legs on the right and left sides. After you've divided the barbules, wind in front of them to make the legs move back. Tie off and apply head cement.

photos-Charles R. Meck

Dressing: Hendrickson Emerger

Hook:	Size 12 or 14 nymph hook.	**Wing Pad:**	Dark part of furnace hackle.
Thread:	Brown.	**Body:**	Brownish-black angora or opossum fur (mix about eight parts of black with two parts of dark brown).
Tails:	Barbules from a hackle tricolored light ginger, coachman brown, and dark gray or black.	**Hackle:**	Brown hackle tips from the same hackle tips you used on the wing pad.

Conserve 2000: Resource First

by Carl Richardson

CONSERVE 2000

PROTECT PENNSYLVANIA'S WATERS

This article is the last in the year-long series of articles on major topics of concern in the Commission's theme, "Conserve 2000." This article explains the Commission's resource protection efforts.

PENNSYLVANIA FISH & BOAT COMMISSION

RESOURCE FIRST

PROTECT • CONSERVE • ENHANCE

If you follow Commission programs closely, you've likely seen the phrase and logo for "Resource First." As the Commission approached the 21st century, you might also have noticed another phrase and logo: "Conserve 2000." The concepts captured by these slogans are very simple. No water, then no fish. No fish, then no fishing. No water, then no boating. No wetlands, then no amphibians, either. These simple ideas guide the Fish & Boat Commission in carrying out its mission.

The natural resources of the Commonwealth have led to its success in world markets in the last 200 years. Natural resource-based recreation has been an equally important part of our culture. The last five issues of *PA Angler & Boater* have featured a series of articles on important resource issues of the last century and their legacy for the future. Those issues included threatened and endangered fishes, amphibians and reptiles, recreational access, migratory fishes, and fish habitat. The articles also focused on Commission efforts to address these challenges.

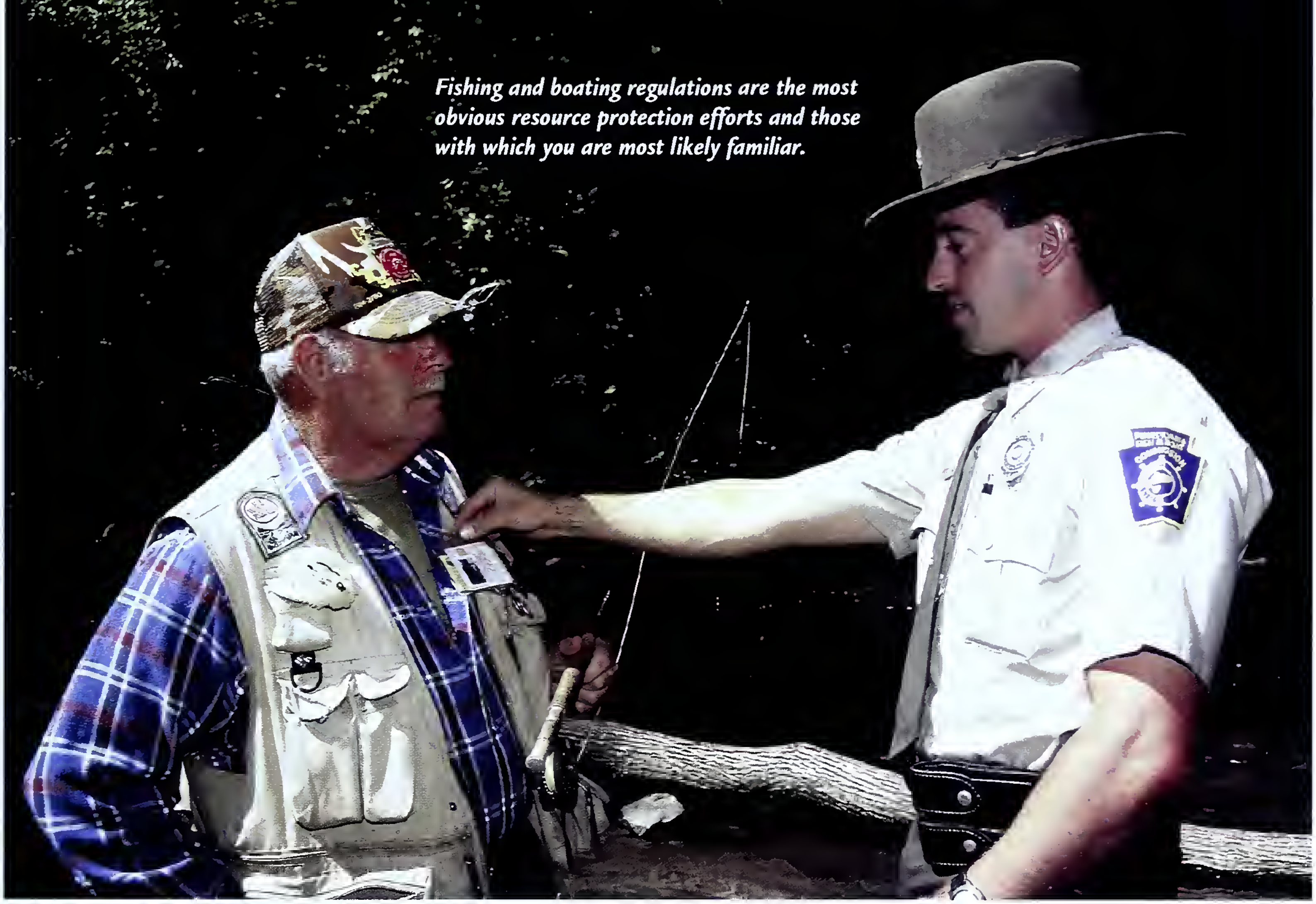
These articles also illustrated how issues on a global and regional scale could affect your fishing and boating. Global, regional and local demands for natural resources here in Pennsylvania do have an effect on our fishing and boating opportunities. Because these two activities are the main focus of the Commission, we take the idea of "Resource First" very seriously, especially when it comes to resource protection.

Protecting a resource typically takes one of two forms—preventive or punitive. We try to prevent activities that may affect the resource before they can harm the resource. If activities do result in harm to the resource, then we penalize those at fault.

Another way the Commission protects the resource, although indirectly, includes conducting research aimed at learning more about the resource and those who depend on it. The Commission applies this information when reviewing activities that may affect the resource. The Wild Resource Conservation Fund pays for much of this important research.

Fishing and boating regulations are the most obvious resource protection efforts and those with which you are most likely familiar. The resource "belongs" to all of us, but we can't all use it as each of us sees fit. That is, if I catch and keep all the trout in a section of stream, then you can't enjoy the fishing there.

That's why the Commission sets regulations that place limits on sizes, possession, seasons and methods. Pennsylvania law authorizes the Commission to set regulations and penalties. Title 30, also known as the Fish and Boat Code, outlines the regulatory authority of the Fish & Boat Commission.



Fishing and boating regulations are the most obvious resource protection efforts and those with which you are most likely familiar.

photos-Art Michaels

The formulation of the regulations is based on the resource and the opportunities it's capable of producing. Commission area fisheries managers conduct extensive surveys of fish populations and habitat. Regulations are then set based on the characteristics of that resource. For example, Penns Creek in Centre and Mifflin counties has enough natural reproduction of trout on some sections that it doesn't need to be stocked—so it isn't. The season for keeping fish closes on wild trout streams on Labor Day so that wild trout are afforded additional protection. In addition, these sections have the capability to grow trophy-sized trout (14 inches or larger). So regulations setting higher minimum sizes and lower creel limits are put in place.

Cedar Run, Tioga County. The formulation of regulations is based on the resource and the opportunities it's capable of producing. Commission biologists conduct extensive surveys of fish populations and habitat. Regulations are then based on the characteristics of that resource.

These regulations prevent the resource, like a creek, pond or lake, from being overfished. Anglers who don't follow those regulations and who are caught by the Commission's waterways conservation officers (WCOs) are penalized.

This approach is similar to the one the Commission takes when dealing with non-fishing and boating activities, like the construction of a mall, highway or sewage treatment plant.

Permits, prevention

Pennsylvania was one of the first states to pass strict environmental protection legislation in the 1960s and 1970s. These regulations require that permits be acquired before streams can be crossed or changed, or before anything is discharged into the water or air. The permit application and review process allows for the consideration of activities that might harm the resource. Occasionally, the activity may be so harmful that it is not acceptable and the permit is denied. Sometimes, as a condition of the permit, the original plans are changed to minimize or eliminate harmful activities.

Each year, the Commission's Division of Environmental Services, with the assistance of WCOs, reviews thousands of permit applications. We review the proposed activity and consider its potential effect on fishing and boating resources. This review often requires site visits and the

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Stream habitat improvements are built to improve sections of streams that are channelized or sent through culverts. They are also built to enhance habitat and fishing opportunities.

photo-PFBC file photo

collection and review of data on fish populations, habitat and recreational use.

The Commission's authority to conduct these reviews and provide regulatory direction varies and is complex. On most projects, the PA Department of Environmental Protection (DEP) consults the Commission. DEP relies on our expertise and knowledge of aquatic resources to make determinations about the effects of activities. With our input, DEP either denies or approves the permit. We may also recommend that the activity be changed to minimize the effect and that the change should be a condition of the permit.

Once a permit is approved, the public is allowed a 30-day period to comment on the permit and its conditions. At this point, the Commission may again provide feedback to DEP. This process applies to most of the permits reviewed by the Commission.

One of the best examples of how this process is put into practice occurred several years ago in Schuylkill County. The Mahanoy Township Authority (MTA) applied to DEP for increased water withdrawals from dams and intakes on several different streams. As you know, water is a limited resource, but demand is increasing. Our review of these streams showed good populations of wild brook trout. The Commission expressed concern about the effects these additional withdrawals would have on the populations. Often in these instances we recommend that water be released to maintain minimum flows in streams to protect aquatic life—these releases are referred to as "conservation releases."

In this case, the permit was issued without conservation releases, and we appealed to the Environmental Hearing Board. Through negotiations, MTA agreed to conservation releases, which were made a condition of the permit. So the permit was structured to provide the greatest flows through conservation releases on the streams with the best wild trout populations. There are countless similar examples, unknown to most anglers and boaters, in which the Commission negotiated with the permit applicant to protect aquatic life and recreational opportunities.

Federal projects

On projects such as highways, where federal funds are used, federal laws require consultation with state fish and wildlife agencies. The authority for the Commission's review comes from the National Environmental Policy Act, passed in the late 1960s. The Commission has staff, supported by funds from PennDOT, dedicated to reviewing highway projects. Each year, this staff reviews permit applications and designs for hundreds of stream crossing structures and channel relocations. If you cross one of our many waterways on a newly constructed bridge or highway, our biologists had a hand in that project.

Not just fish—recreation opportunities, too

There are two great examples where our cooperation with PennDOT and the review of projects paid off in greater recreational opportunities. PennDOT was constructing a replacement bridge over the West Branch Susquehanna River at Hyner, Clinton County. The old bridge was a popular spot for launching and retrieving canoes. PennDOT, using our input, located the new bridge in a different spot and constructed a canoe access at the old site.

Another good example is found along Route 322 in the Juniata River Narrows, near Lewistown. Construction of a wider, limited-access highway in that section will eliminate popular pulloff spots for anglers and paddlers. With our input, PennDOT will construct an access area off the new limited-access highway. Commission efforts and cooperation with PennDOT will ensure that anglers and boaters have access to the resource.

Fines

Just as an angler gets a citation and a fine when violating fishing regulations, so do polluters. Fines are based on the damage done to the resource. Waterways conservation officers and their supervisors investigated some 477 cases of pollution/stream disturbances in 1999. Some of those cases are still pending, but the Commission collected more

photo-Art Michaels

Beech Creek, Clinton and Centre counties. Commission Division of Environmental Services employee examines the chilling effects of "yellow boy"–chemicals leached from acid mine drainage that stain the stream rocks and kill aquatic life. Just as an angler gets a citation and a fine when violating fishing regulations, so do polluters. Fines are based on the damage done to the resource.

Examples of Activities Requiring DEP Permits

- Draining or altering of wetlands.
- Discharge into air or water.
- Changing stream bed, channels, banks or riparian zones.
- Stream crossings.
- Withdrawal of water from surface or groundwater.

than $300,000 in fines in 1999. The Commission's authority to fine polluters comes from the Fish and Boat Code's Chapter 25. The funds collected through the fines go back to the Commission and are used to support Commission programs.

Many cases prosecuted by the Commission under Chapter 25 are small, isolated events. However, some have occurred over many years and involve many state and federal agencies–and lots of money. In the late 1980s, Pennzoil settled a pollution case with the federal Department of Justice by paying $1.15 million. The case resulted from the long-term discharge of brine from oil wells into streams in McKean County. Brine is a watery mixture of chemicals, including salts, which is a byproduct of the oil extraction process. It has a devastating effect on aquatic life and the habitat that supports life.

The Commission took $150,000 it received in that settlement and provided grants to local Trout Unlimited chapters for habitat improvement work. The improvements lessen the effect of the loss of life and habitat.

Fines for the Ashland Oil spill on the Monongahela River totaled $1.75 million. The Commission created extensive habitat maps of the Three Rivers region using $1 million from the legal settlement. Side-scan sonar was used to characterize the suitability of different habitat for various river fish species. The maps can help us better understand this ecosystem, and prevent future projects from affecting fish populations. The Commission also used $350,000 of the fines to characterize recreational use in the Three Rivers area. Little data was available before on recreational use of major Pennsylvania rivers.

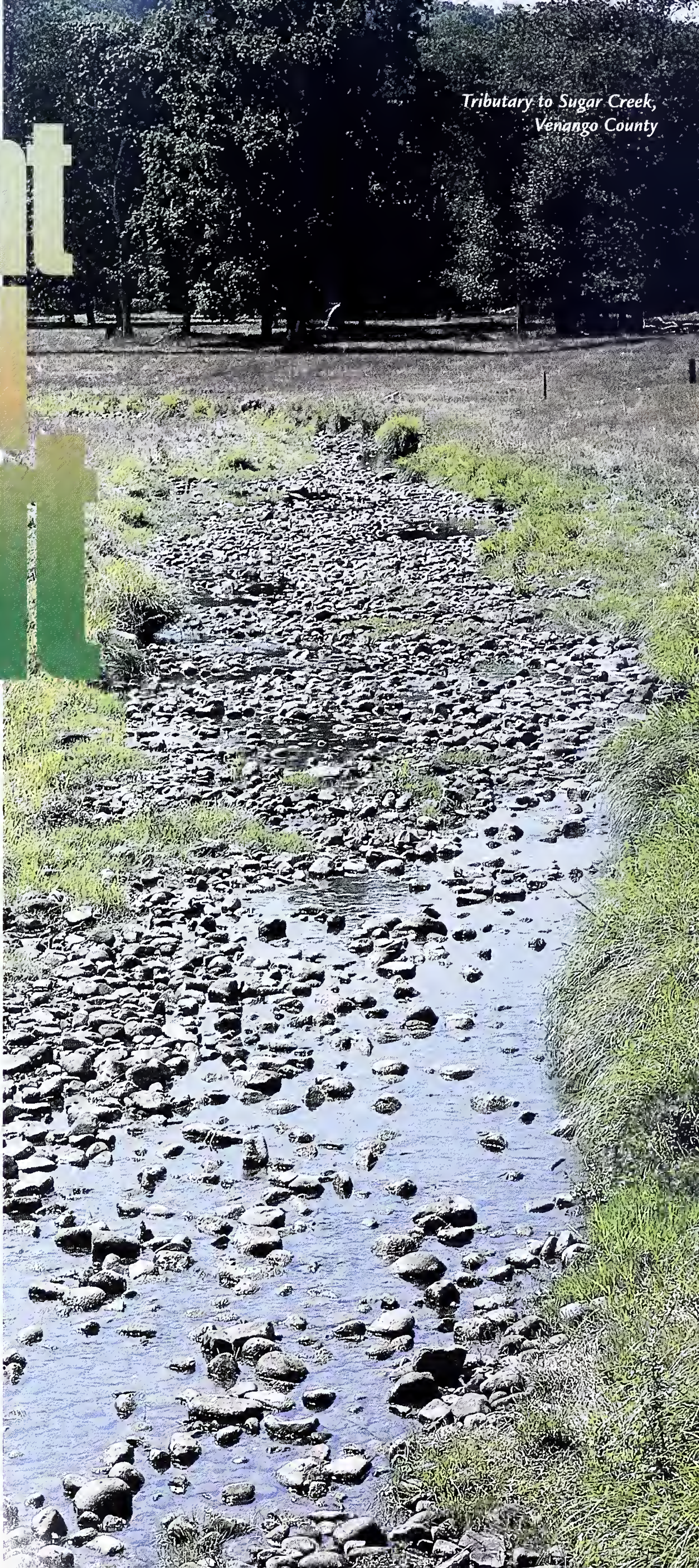
Mitigation is also a technique used on highway projects, especially where wetlands are affected. New wetlands are constructed to replace those lost in construction at a rate of 1:1 to 2:1. That is, for every acre lost, up to two acres are built. Stream habitat improvements are also constructed to mitigate sections of streams that are channelized or sent through culverts.

The more obvious signs of Commission efforts to provide fishing and boating opportunities may be found in stocking fish or building access areas. However, as you can see, behind-the-scenes activities can pay big dividends in protecting opportunities, by protecting the resource. "Resource First" is more than a catchy slogan–it's a way of doing business.

Building on the themes of this year's Conserve 2000 articles, in 2001,* PA Angler & Boater *will include articles focusing on habitat. Articles will detail the importance of specific habitats and efforts by others to enhance and conserve habitats.

Drought and Trout

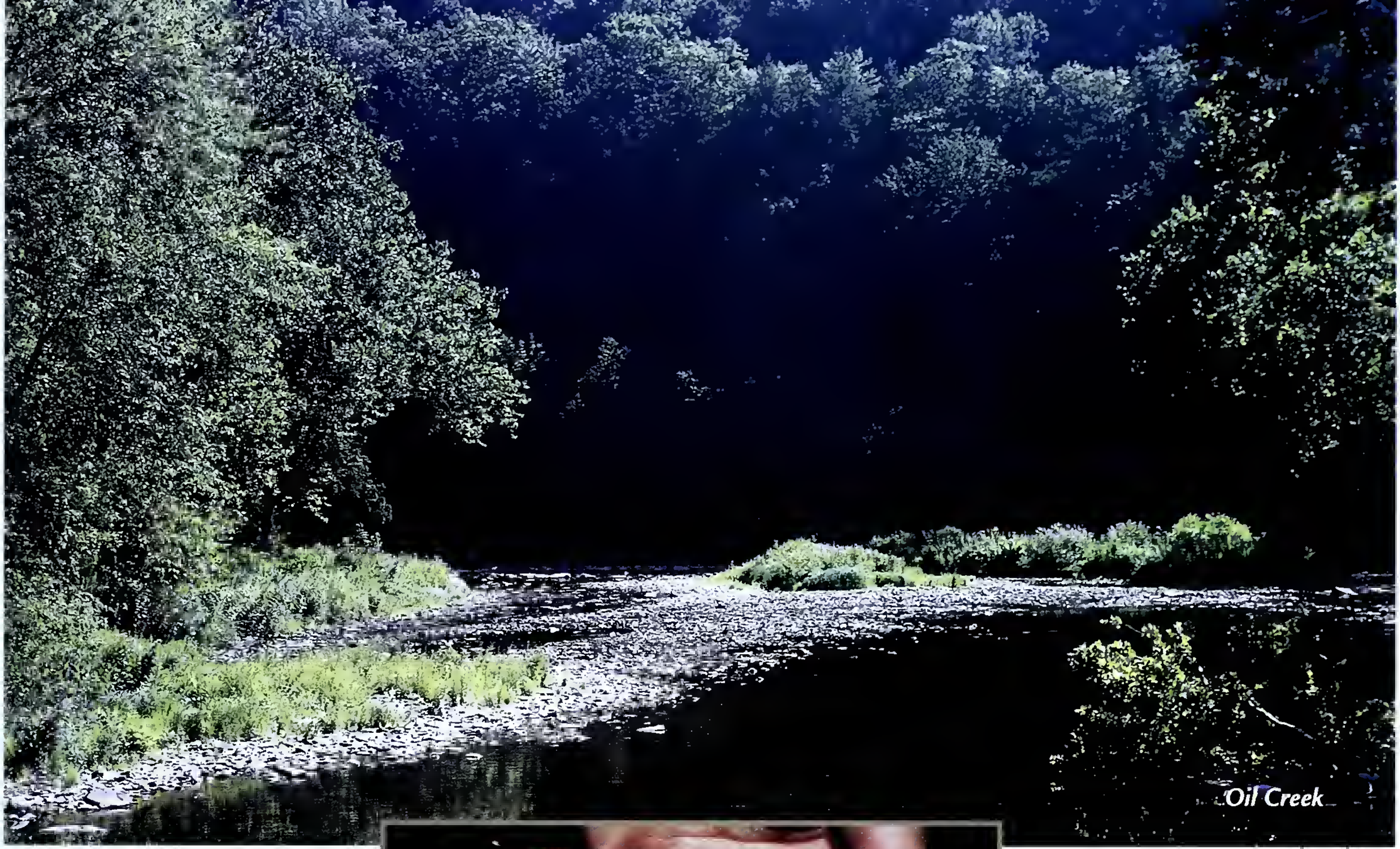
by Linda Steiner



Tributary to Sugar Creek, Venango County

photo Bob Steiner

Remember the summer of 1999–infamous for its extreme heat and lack of rainfall? Trout streams became mere trickles between shrunken pools. Anglers watched their stream thermometers inch upward, and they were worried.



photos-Bob Steiner

Small wild brook trout. Wild brookies seem to survive low water better than browns and rainbows.

In 1999, all of Pennsylvania experienced at least some effects of having very little rainfall, including long periods without any rain. The drought was most severe in the southeast region, less so in the northwest, where "only" a Drought Watch or Drought Warning was posted, which asked people to reduce their water use voluntarily. Dry, brittle lawns and dusty cars were most folks' complaints...unless they were anglers or otherwise attuned to what was happening in the streams.

Actually, the summer of 1999 wasn't the beginning of a drought, or a lower-than-normal precipitation period, in the eastern United States. For the last several years, meteorologists talked about the effects of El Nino and La Nina, huge weather and ocean temperature events in the Pacific, influencing rainfall patterns across the Americas. Some scientists suggested the drought was a warning of global warming, and predicted future weather extremes.

Weather periods of wet or dry, even those extending through several years or decades, are just wrinkles in the overall climate on that section of the Earth. After all, we are on a planet circling in the cold void around a hot star. Luckily, temperatures on our home chunk of space rock allow water to be liquid in most places most of the year, and most of the time, we have plenty of it. A few ups and downs in the details are to be expected.

But that doesn't stop concern about what is occurring on a favorite trout stream. Just what happens to trout in a drought, and how are Pennsylvania's trout fisheries doing after last year's drought?

Tom Greene, Fish & Boat Commission Coldwater Unit Leader, says that most wild trout populations in the state are "going to be fine," even after the stresses of the 1999 drought. "There is something ingrained in wild trout, they are adaptable, and they survived drought periods long before we started studying them," says Greene.

Drought offers a double whammy to trout, which are suited to colder water than the water found in most Pennsylvania streams. Summer drought and hot, sunny skies affect both the water's temperature/oxygen-holding ability and its depth/flow. Wild trout, those that are born and grow up the "natural way" in a stream, are especially dependent on a narrow window of water temperature/oxygen content and depth/flow. Their home creeks are generally small, narrow and shallow, even under sufficient rain conditions. But what happens when the rains don't come?

Freestone streams, those that receive most of their water as runoff from the land surface, are more susceptible to fluctuation with drought than spring creeks, which receive a large portion of their flow from underground sources. What most people think of as typical "mountain" wild trout streams are freestoners. They are usually found in steep, shaded glens, which allow them to keep trout-comfortable temperatures.

Limestone streams weather drought better than freestone streams, says Greene. A spring creek's temperature doesn't change as readily as a freestone stream's and its flow stays

Drought and Trout

photo Bob Steiner

relatively constant. But limestoners may typically sink from sight (and seemingly dry up) when the water table drops as the result of drought. When the stream reemerges from underground, farther down its drainage, it will be in better condition–cooler–than before it temporarily sank.

Brook trout, Pennsylvania's only native trout, are known to prefer lower water temperatures than browns or rainbows. Yet, says Greene, from the biologists' stream studies, it appears that wild brook populations fared better during the drought than browns, which "took it harder." Perhaps the wild brookies' smaller size or the fact that they have experienced low-water conditions generation after generation here in Pennsylvania, evolving with the vagaries of our weather, allows them to make it through our droughts.

The water's temperature and its oxygen content work together, says Greene, and are more important to a trout's survival than mere stream level. Cooler temperatures let more oxygen stay dissolved in the water. At warmer temperatures, physical aeration, like waterfalls, rapids and riffles that tumble water and air, is needed to add sufficient oxygen for trout.

The amount of flow in a stream affects the water's temperature, says Greene. In the low water of a drought, a stream has fewer deep spots and less volume to retain coolness. Shallow water is more exposed to summer air, the effects of sunlight and warmed ground, and gains heat and loses oxygen. During the summer of 1999, each watershed could be evaluated individually, he says, with some stream flows obviously lower than others. Fortunately, for most surveyed wild trout creeks, "temperatures remained within the typical range for trout," says Greene.

As far as the amount of water, "the tiny headwater streams undoubtedly had flows reduced to a bare minimum," says Greene. "This meant less protective cover for the wild fish, and they sought the larger pools for refuge." In many wild trout streams, mere trickles ran between reduced pools. With [illegible] cover available during low flows–some usual [illegible] spots were high and dry and others too shallow to [illegible] refuge–trout were more vulnerable to [illegible]. Many wildlife predators found the pickings [illegible] including raccoon, mink, otter, blue heron, merganser, kingfisher and osprey.

This extra taking of trout might temporarily reduce the number in a stream, but it's a survival plus for fish-dependent wildlife and their young, in nature's typical give and take. But in another light, reducing the population is an advantage for the trout that remain in the shrunken stream, those that are hearty and well-hidden enough to last until normal flows return.

Fewer trout when the stream can only hold a reduced number is a sensible arrangement. Given rainfall recovery and a return to normal stream levels, a good spawn and subsequent survival, with sufficient food, cover, flow and oxygen in the stream again, a creek's wild trout population can soon be as good as ever. Anglers might experience several years of fewer or smaller fish caught, until the post-drought trout generations grow up.

When streams refill after drought, anglers often remark about the fish that reappear. Where did they all go, and from where did they come back? Some practically did crawl under a rock. Not much space is needed beneath a stone or log and not much depth is required beneath an overhanging bank or shadowy hemlock branch to keep a small, wild trout until the rains come. Trout may also move upstream or downstream to find cooler or deeper water, and return to the abandoned sections when the creek flow recovers.

The places trout go to make it through the drought aren't just hiding spots from predators. Trout also need thermal refuges, escapes from the heat. These can be as simple as the shade and coolness of the rocks the trout is hiding under. Just a few degrees can make the difference in the trout's comfort and survival, compared to parts of the stream in full sun.

The bottom line for wild trout and drought is "they've seen it all before," says Greene. "Good wild trout populations are very resilient." After the summer of 1999's lack of rain, Pennsylvania did get some relief, some storms, in time for the fall trout spawning. "We won't know until we fully evaluate our research from the summer of 2000 how that year-class of trout is doing," says Greene.

Indeed, by the end of 1999 most counties in the state were back to normal annual precipitation amounts.

But that doesn't mean the drought is off, at least not for the state's underground aquifers. These take longer to regain the normal water table level than freestone streams, as rainwater and snowmelt filter through the rock structure. Underground water can be affected for years after a drought, or those levels can recover nearly as quickly as surface waters, according to the local geology.

The Fish & Boat Commission's trout-raising facilities depend on ground water supplies, says Jim Harvey, Chief of Trout Production. "During the fall and winter of 1999, we were suffering from reduced flows at half of our stations," he says, a situation that has been going on for several years at some facilities. "All the trout stations are based on springs, which are slow to respond to precipitation," says Harvey. The Huntsdale Fish Culture Station, near Carlisle, had sufficient water during the summer of '99, but was losing flow in the first part of 2000.

Corry Fish Culture Station is the trout-rearing facility most affected by the drought, says Harvey. At the end of last winter, Corry was still at about half its normal flow. Huntsdale was still down several thousand gallons per minute of flow, and Benner Spring and Big Spring were both reduced, says Harvey. For most hatchery springs, six months has been the time lag to respond to rain or lack of rain. As of the beginning of the summer of 2000, all of our spring flows have returned to normal.

The several years of drought that have recently been experienced by the Commission's hatchery system had one positive result. Harvey says the trout-rearing stations have found out how to manage around low flows. "We're learning to live with it and we're not planning to cut back any trout numbers," he says.

photo-Bob Steiner

What about the stocked trout once they're in streams? Their lot, if they are to survive summer drought, is the same as that of the wild fish: They must seek out thermal refuges and stay away from tooth and claw. Most catchable-size stocked trout will likely have been creeled before summer heat and low water time; they're planted in the streams for recreation, not to establish enduring fish stocks. Practically by definition, stocked trout are put in streams that do not have a high population of wild trout, that is, waterways that are not self-supporting of trout. Most stocked trout waters are marginal at trout-producing or trout-keeping for a variety of reasons, including too readily succumbing to drought heat and low flows.

Perhaps as much of a concern for a potential holdover stocked trout or a wild trout is drought in winter. Very low water then lets the streambed ice up, forming anchor ice. Ice builds on the surface and edges, too, nearly freezing the stream solid. After the ice breaks and flows pick up, the churning and gouging by ice chunks take their toll on trout and their eggs.

Besides ice scouring, after the rains come or the accumulated snow melts, streams can receive a flush of pollutants made more deadly by previous drought. Acid precipitants, which can be deposited from the atmosphere in dry form, can build up on the surface of the ground or concentrate in old snow cover. The acid precipitants are then washed into a stream in larger amounts than is usual in rainfall or snowfall, giving sensitive trout streams a decimating slug of acid deposition.

The acid pollution from coal mines can also increase after drought conditions. During a drought, when water levels in coal mines are very low and the mines are no longer flooded, oxidation takes place on exposed pyrites. The stage is set for a flush of sulfuric and other acids and trace metal salts into receiving streams after the rains return, shocking the waterway and killing aquatic life, including what trout may be there.

Tom Greene is philosophical about the state of the state's wild trout streams after the latest drought. "Time will tell," he says. "There'll be wild trout out there, though they fared better in some stream situations than others in the short term. The trout have seen this before and not that far back. The summer of 1988 was a toughie, 1991 was a bad one, and 1999 was no picnic."

There were several other drought years Greene remembers, and there will be more. But let the rains fall again, another generation of wild trout emerges from the stream gravel, and with a little time the drought of '99 will be mere memory of a summer when the grass didn't need mowing. In the list of what can affect trout and trout streams, natural droughts are one of the least concerns–the severest problems are manmade.

Aids for Aging Anglers

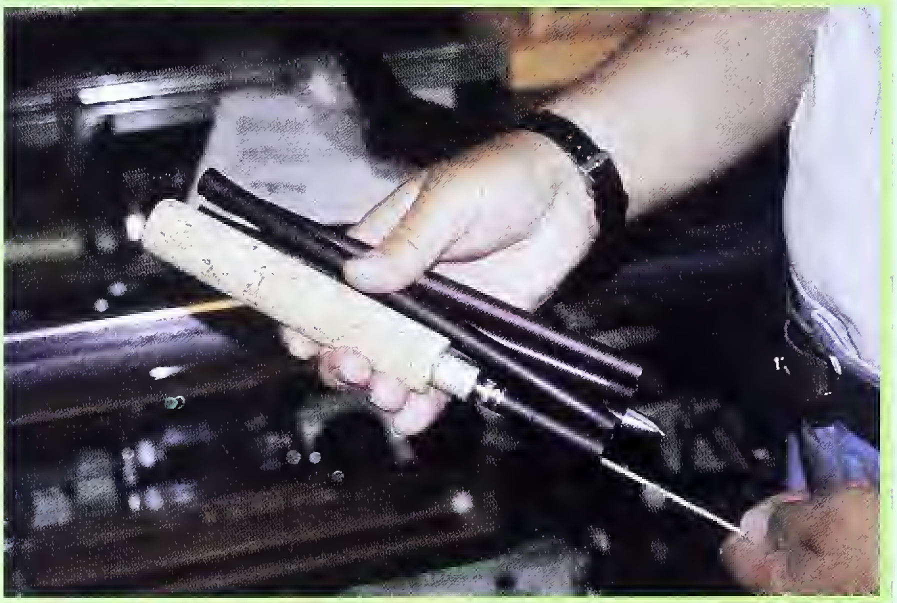
What I needed to go fishing in my 20s:

Rod, reel, bait, salami sandwich, cherry soda.

What I need to go fishing in my 50s:

Wading staff, magnifier glasses, back brace, polarized sunglasses, inflatable fishing vest, gooseneck light and knot-tying tool. And a rod, reel, chicken sandwich on whole-wheat bread (hold the mayo) and a thermos of one-percent milk.

by Bob Quarteroni



photos-Bob Quarteroni

This five-piece aluminum wading staff has a cord that attaches to an angler's vest or waist.

And that's for a bright, sunny summer day. When I go fishing when it's cold, I have to add cleated boots, a handwarmer, toeheaters and polypropylene underwear. I don't take a sandwich warmer along...yet.

How did such a simple sport begin to require so much gear, assistance and aids? I'll tell you how. I've been alive for some 19,130 days. An angler at that mark is like an automobile nearing 100,000 miles: It may still be running fine, but you need to take better care of it, and make sure all the fluids are topped off and the belts are tight.

It's undeniable: We are an aging nation. But age is only a state of mind. As John Webster noted in 1607, "Doesn't old wood burn the brightest and old linen wash the whitest?"

Similarly, equipped with today's modern conveniences, senior anglers may fish the best. At the very least, today's aids make our days on the water more productive, far safer and less frustrating.

In the months I've spent looking into aids for aging anglers, I've come across a slew of interesting accessories, from ones that are a bit much (like the "sunblock shirt" whose fabric has a sun protection rating of SPF 30, "twice the minimum protection experts recommend for sunscreen"), to others that I covet but I'm too cheap to buy (like the GPS receiver for a mere $368).

Throwing those out, I've come up with a list of what Pennsylvania anglers seem to agree are the most essential items to make a fishing outing a better, safer time for the "senior" angler-and I define "senior" as "as old as you feel."

Magnifiers, lights

One thing we all seem to suffer from once we get past the age of 40 is the inability to see tiny objects up close. Anyone who has tried to thread a size 20 fly on a 6x tippet without help of one kind or another knows exactly what a "senior moment" is. For me, even though I wear contact lenses, the solution is a pair of magnifying eyeglasses. These run the range from the $4.99 specials I buy at a local discount store (and which come in varying strengths, up to those that make a worm look like a prehistoric monster), to the truly wonderful magnifying lights available in most fishing shops and through all outfitters. You wear this on a cord around your neck and the handy 2x or 3x magnifier lights up to help you tie knots, hook on tiny, wiggling bait, or tie on teensy flies or tippets. You can fold the light flat against your chest when it's not in use, and a protective case keeps the light out of harm's way. They aren't expensive, either: I've seen fine models for as little as $16.

Almost as good are "flip" glasses. These are plastic lenses that clip onto the brim of your cap, freeing both your hands. They magnify objects, depending on which model you choose, from 1 1/2 to four times. They flip up out of the way when not in use and are inexpensive and invaluable.

photo-Bob Quarteroni

An angler examines a fly under an illuminated magnifying light. These kinds of lights most often come in 2x and 3x magnification. They hang from a cord around an angler's neck and fold up and out of the way when not in use.

There is a wide assortment of other lights to consider, from the flexible gooseneck light that I use that points the light exactly where you need it, to tiny 2.5-ounce lights that come with headbands and even red night-vision lenses.

Also good for the visually questionable are the threader fly boxes that allow you to open the box, insert your tippet into the wonderfully large eye of the threader and then pull the fly off, magically threaded onto the tippet. You can also preload flies at home for speedy use on the water.

Wading staff, polarized sunglasses

Wading staffs come in a truly staggering variety, from collapsible models to telescoping models and folding models, and even super models with a "hook tip fly grabber."

Assisting the wading staff—and an absolute must for all anglers, as far as I'm concerned—is a good pair of polarized sunglasses, which allow you to see through the surface glare to the bottom of the stream, river, lake or pond you are fishing. They are also invaluable for boaters, allowing boaters to detect underwater hazards. They also let you retrieve that expensive new lure that just slipped out of your hands and splashed into the murky water at your feet.

The chief advantage of polarized sunglassess is in making wading easier. I wouldn't try to navigate any of the streams I fish without my favorite amber polarized glasses. Even

Cleated outsoles can be attached to wading boots for slippery or icy conditions.

though you can pay more for a pair than for a matched set of microwave ovens, you can also get perfectly decent ones for $10 to $20 at department and fishing stores.

Sunscreen

Another problem with aging—and a very serious problem for all outdoor people—is the effect the sun has on our skin, not only weathering it but also for increasing our chances for skin cancer. For that reason, sunscreen is a must. I've found a product—there are at least three on the market—that combines sunscreen with insect repellent, allowing you to handle two problems at once. According to a recent consumer magazine report, these combination sunscreen/insect repellent products are as effective and inexpensive as are any comparable products.

And it goes without saying that a sun-protecting cap or wide-brimmed hat is a necessary part of any angler's outfit.

Water

One of the most inexpensive aids is perhaps the most important. As we get older, we tend not to recognize the signs of dehydration as quickly as we once did. For this reason, it's important to take along bottled water on an outing, especially on those dog days of summer or when you are going to be out on a boat all day. The proliferation of small plastic water bottles makes carrying sufficient water a breeze. I use the bottles over and over again, filling them with tap water, and I judge the severity of the heat by whether it's a two-, three- or four-bottle day. If it's a five-bottle day, it's too hot to fish.

First aid kit

I'm always surprised by how many anglers don't carry a simple, but potentially life-saving, first aid kit. I bought a very complete, compact kit for less than $20. It fits neatly in the back of my vest. It contains bandages, antiseptic, gauze, scissors, a compression wrap and much more. Injuries that we might shrug off in our earlier years cannot be taken as lightly now. These kinds of first aid kits are available everywhere.

Cold weather concerns

Cold-weather fishing has problems all its own, and those problems are especially severe when our circulation and endurance aren't what they used to be. That's why I never fish in the cold-water months without my two winter friends: A handwarmer and polypropylene underwear.

Handwarmers come in all shapes and sizes and heating elements. Mine reliably delivers temperatures of 135 degrees for up to seven hours. You never realize how essential handwarmers are until you are shaking with the cold and try to do anything with your hands, from zipping your jacket to trying to hook a wiggling minnow on an icy hook.

Polypropylene underwear simply can't be beat. It insulates infinitely better than old-fashioned cotton long johns, and it has the added advantage of wicking moisture away from your body, keeping you warm and toasty. Polypropylene also makes my over-the-knee winter wader socks much warmer without adding any weight.

Life jacket

I don't think any angler should go fishing without a life jacket. There are various versions intended for boating anglers and for wading anglers. Life jackets are inexpensive. You can get a Type III wearable life jacket for around $20. Type V inflatable life jackets are a bit more expensive, starting at around $60. Inflatable life jackets are equipped with carbon dioxide cartridges that instantly inflate flotation chambers when a cord is pulled. The vests can also be inflated by mouth through a tube. They add little or no bulk. Any angler who has had his or her boots fill with water in an icy, rushing stream knows how hard it is to get up and out. These life jackets are designed to keep you afloat until you can gather your wits and help yourself. Make sure that whichever life jacket you buy is U.S. Coast Guard approved.

Cell phone

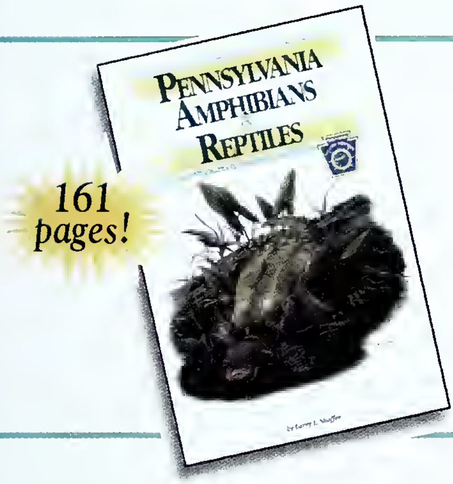
I know personally how invaluable a cell phone can be. Three years ago I planned to fish a Lehigh River tributary. It was a beautiful midsummer day, so I decided to wade the river in shorts and sneakers. Just as I was about to start fishing, I fell on a rock and sliced open a three-inch gash below my right knee. It was all I could do to tie a makeshift compress on it to control the bleeding. Without a cell phone to call for help, the situation could have been much more serious.

A cell phone isn't that expensive. Just remember to turn it off when you are fishing and save it only for emergencies. No one, including me, wants to have the serenity of a beautiful day destroyed by the ringing of a telephone. □

Products and Publications

Guide to Public Fishing Waters and Boating Access

This 96-page book, lists by county the locations of Pennsylvania's public accesses with information on each access's services. Also listed are brief driving directions to each access. The book also lists Pennsylvania public fishing waters by county, including miles for flowing waters and acreage for impoundments and lakes, species available and nearest towns.



Pennsylvania Amphibians & Reptiles

This 161-page, full-color book lists Pennsylvania's salamanders, frogs, toads, turtles, lizards and snakes. Each animal's account includes details on general characteristics, identification, range, habitat, reproduction and food. Range maps and full-color illustrations and photographs help anyone identify each species.

Pennsylvania Fishes

This new 170-page full-color book contains detailed information on 140 fishes found in Pennsylvania. Each species account includes an overview and sections on identification, habitat and life history. The book is fully illustrated and indexed, and it includes a list of species by watershed. A list of resources, illustrated glossary and reference section help students, anglers and those just interested in learning more about Pennsylvania fishes.

Endangered and Threatened Species of Pennsylvania

This book is 80 full-color pages and includes details on Pennsylvania's endangered and threatened invertebrates, birds and mammals, fish, reptiles, amphibians and plants. The book was produced as a cooperative effort among the Fish & Boat Commission, Game Commission, DCNR Bureau of Forestry, and the Wild Resource Conservation Fund.

PFBC Fishing & Boating Map

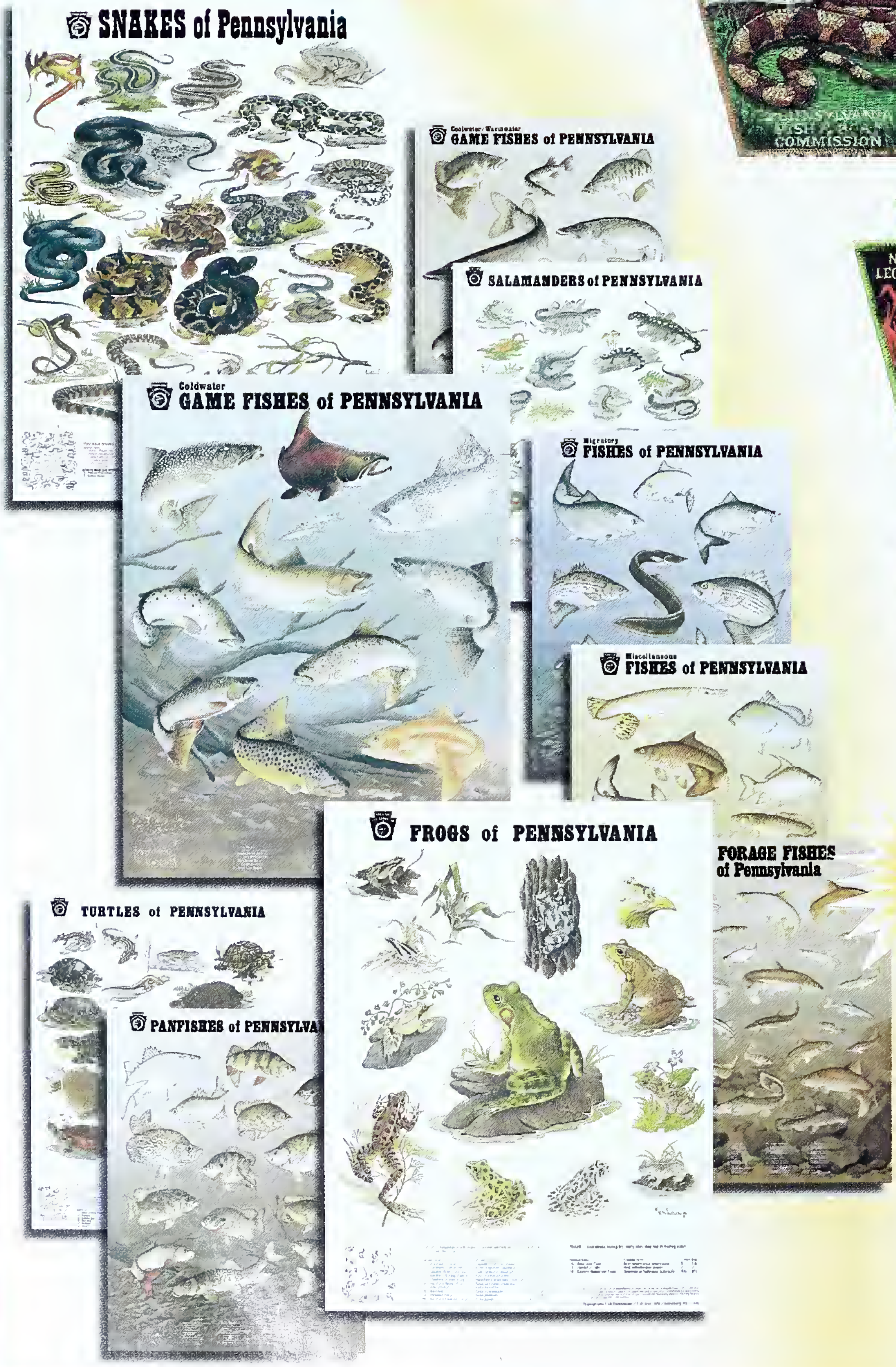
The full-color folded map measures 37 inches x 22 $^{3}/_{4}$ inches flat. With the official Transportation Map, the map marks the locations of more than 900 fishing and boating accesses, lake and impoundment special-regulation areas, flowing water special-regulation areas, fish culture stations, universally accessible areas, Commission offices and pumpout stations.

Products and Publications

Limited Editions!

Commemorative Patches

Commission commemorative patches are limited-edition items. Nongame species patches help raise awareness of Pennsylvania's nongame and endangered fish, reptiles and amphibians.


SNAKES of Pennsylvania
Coolwater-Warmwater GAME FISHES of PENNSYLVANIA
SALAMANDERS of PENNSYLVANIA
Coldwater GAME FISHES of PENNSYLVANIA
Migratory FISHES of PENNSYLVANIA
Miscellaneous FISHES of PENNSYLVANIA
FROGS of PENNSYLVANIA
FORAGE FISHES of Pennsylvania
TURTLES of PENNSYLVANIA
PANFISHES of PENNSYLVA

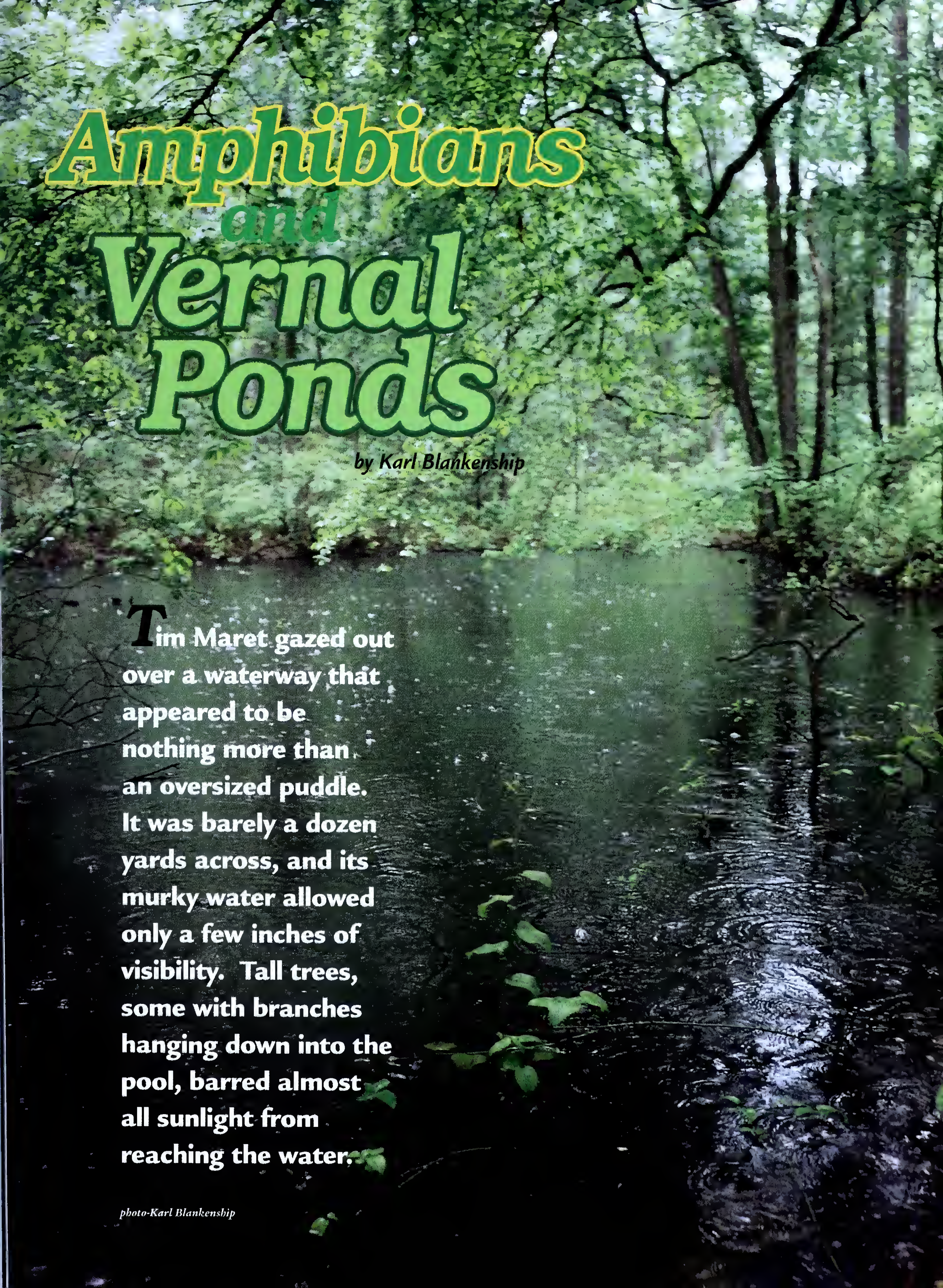
BIG!
17" x 22"

Wall Charts

Each of the Commission's suite of 10 wall charts is printed in full color and measures 17 inches by 22 inches. Wall charts are printed on quality paper and are suitable for framing. Shipped rolled in tubes, not folded.

Amphibians and Vernal Ponds

by Karl Blankenship



Tim Maret gazed out over a waterway that appeared to be nothing more than an oversized puddle. It was barely a dozen yards across, and its murky water allowed only a few inches of visibility. Tall trees, some with branches hanging down into the pool, barred almost all sunlight from reaching the water.

photo-Karl Blankenship

photo-Karl Blankenship

As part of a project supported by the Wild Resource Conservation Fund, biologists are working to document the abundance and survival of amphibians in vernal ponds.

"This is what I think of as a classic vernal pond," Maret said. Then, the Shippensburg University biology professor and a graduate student, Joe Wilson, both decked out in hip boots and carrying long-handled nets, waded into the dark water.

They began methodically dipping their nets into the bottom, periodically pulling them up to see what they had collected. After five minutes—a standard sampling time—they took stock of what they had. The catch included more than 100 wood frog tadpoles and a handful of Jefferson salamander and spotted salamander larvae.

Before releasing their catch, they measure each specimen from snout to vent; the tail doesn't matter. "It's pretty common to find some of them missing a chunk of tail that was bitten off," Wilson said.

This is the world of the vernal pond, where many of the inhabitants are in a race against time. Vernal ponds are temporary pools created by snow melt and spring rains ("vernal" is derived from the Latin word for spring). In most years, they dry up in the summer. Any amphibians that haven't metamorphosed, or changed, into ground-crawling adults will shrivel up with the pond. Salamanders are carnivorous to begin with. To improve their odds of survival, some even eat their brothers and sisters. "The cannibals grow fast," Maret observed.

As part of a project supported by the Wild Resource Conservation Fund, Maret and Wilson are working to document the abundance and survival of amphibians in a group of vernal ponds in Michaux State Forest in southcentral Pennsylvania. They take samples in each pond to see what they catch; if the makeup of their catch changes over time, it could signal a change in the pond's environment.

Harsh as pond life may sound, vernal pools are good places for many salamanders. Because they go dry, the ponds don't support fish that might devour young salamanders. Also, most pools don't support predatory bullfrogs. Bullfrogs need a pool to be filled continuously for three years before they can metamorphose into adulthood.

Certain species breed nowhere else. Vernal ponds are essential for mole salamanders such as the spotted, Jefferson and marbled salamanders. They live most of their lives underground in holes or burrows, but migrate exclusively to vernal ponds to lay eggs. The pools are also the exclusive breeding sites for wood frogs, and are full of tiny fairy shrimp—so-called "sea monkeys." The shrimp drop eggs, which remain dormant in the sediment for months—even years—until the pond refills.

The pools are also important for other wetland dwellers. Dragonflies, damselflies and other insects use them, as well as snakes and turtles. Sometimes, rare species turn up: Last year, Maret found northern leopard frogs, which are declining in the region. "Vernal ponds are best known for their amphibians," he said, "but they have all sorts of unique organisms."

Amphibians and Vernal Ponds

Despite their importance, no one knows how many vernal ponds Pennsylvania has, or where they are located. Because of their temporary nature, they can go unnoticed–and therefore unprotected–by wetland regulatory programs.

"They are the underdogs of wetlands," said Mike McCarthy, a biologist with the U.S. Fish and Wildlife Service. "They are easily overlooked and easily destroyed. By definition, they are small and isolated from other waterways, and at certain times of the year some of them dry up, making them unrecognizable. That is why these habitats need some special protection."

Where estimates have been made, the losses can be staggering. It has been estimated that less than seven percent of California's original vernal ponds remain. Ponds can be built upon or bulldozed without anyone knowing they're present. Developers sometimes turn natural depressions into stormwater ponds, directing runoff into them from roads and parking lots. Rainwater, which is unnaturally heated when it hits pavement, also picks up pollution.

Vernal pond habitat can be destroyed even if the pond is never touched. Pennsylvania's vernal ponds are found almost exclusively in woodlands, and trees near the pools are essential for shade and controlling silt runoff into the pools. "Siltation is very hard on the eggs," Maret said. "They can suffocate." Caterpillars falling from the trees into the water seem to be an important food for some species, especially marbled salamanders.

When trees near a pond are cut, pond habitat can be destroyed. Direct sunlight causes the ponds to dry faster, reducing the chance that larval amphibians will emerge as adults. This is especially critical for spotted salamanders, the last species to enter the ponds to breed, giving their larvae the tightest race to mature.

Part of Maret's study is understanding how forestry practices affect vernal ponds. A decade ago, a clear cut exposed several ponds he was studying. Although trees are regrowing, the ponds remain largely exposed to the sun. In many of the more open ponds, Maret has seen no spotted salamanders escape the past two summers.

The mortality rates seem to be very high, probably because the animals aren't getting out before the ponds dry. As these forests recover, Maret suspects the ponds will stay wet longer, and more salamanders will survive.

In Pennsylvania, the Department of Conservation and Natural Resources Bureau of Forestry requires a "no-cut" buffer within 100 feet of vernal ponds, and cutting is limited for an additional 100 feet beyond that. "One thing we have to give the Bureau of Forestry credit for is that even in the absence of regulations, they have decided to leave a buffer," Maret said.

Still, the majority of Pennsylvania's vernal ponds are probably on private land, and they don't get that kind of protection. In areas where they provide habitat for the northeastern bulrush, a federally endangered species, the U.S. Fish and Wildlife Service protects the ponds under the Endangered Species Act. But for most ponds, McCarthy said, the best form of protection is education. "If they are on private lands," he said, "it's going to require a full-time education project just to alert people to even the minimum level of environmental education, which is awareness."

Even experts are challenged to find temporary ponds, which are rarely mapped. "The easiest time to find these ponds is in the spring, when the wood frogs are calling and then tracking down the wood frogs," said Maret, who is studying more than 30 ponds. His five-minute surveys don't capture every species present. But over time, the systematic sampling will show if abundances, or the types of species using the ponds, are changing. Then scientists can start searching for reasons.

Concern about vernal pond habitat, and the species that use them, is likely to grow. There are increasing worries about amphibians, which appear to be undergoing a worldwide decline that some think could be a sign of broader environmental problems. Contributing factors could include everything from thinning ozone layers, which affect their sensitive skin, to habitat loss, disease and pollution–the list goes on.

The problem seems less severe in the eastern United States. But because amphibians have not been targeted for long-term monitoring programs, no one can be certain.

Long-term information is important because amphibian populations are notorious for wide fluctuations. The adults this year left egg masses that were smaller than last year. Maret speculated that this could be a lingering effect of the drought during the summer of 1999. Sorting out what is causing changes, he acknowledged, is a "statistical nightmare." But, he added, "we won't know anything if we don't start collecting the information now."

Becoming a New-Millennium Waterways Conservation Officer

by WCOs Jeffrey A. Barber and Thomas H. Edwards Jr.

photos-WCO Joe Russell

The civil service announcement for testing of waterways conservation officers appeared in 1998, and some 500 applicants applied for the position. About 100 survived the written exam and made it to the interviews, which took place in Harrisburg and Somerset. From this hundred, and after extensive background investigations and physical fitness evaluations, 15 were selected for the Pennsylvania Fish & Boat Commission 15th Waterways Conservation Officer Cadet Class.

Cadet training–and testing–included fish, reptile and amphibian identification and handling, and aquatic ecology.

photo-WCO Joe Russell

The selection process began an extensive 51-week training period for the cadets. During the training process, cadets were constantly evaluated by the training officer, Bureau of Law Enforcement Assistant to the Director Guy A. Bowersox, and other instructors and field-training officers. The training featured a wide array of Fish & Boat Commission instructors as well as instructors from outside the agency, who provided specialized training.

Training began in August 1999 with a two-week orientation at the Commission's H.R. Stackhouse School of Fishery Conservation and Watercraft Safety. When these 15 people from around the state finally met, they found that their backgrounds were different. The two-week session was meant to introduce each cadet to the Commission's mission as well as to create a team for the upcoming challenge of the Act 120 Municipal Police Officer's Academy.

On August 30, 1999, the 15 members of the 15th WCO class were joined by representatives of DCNR's Bureau of State Parks and the State College Municipal Police Department to complete basic municipal police officer's training, also known as Act 120. Collectively, the group became known as the 52nd Basic Municipal Police Officer's Training Class.

All 15 Commission cadets successfully completed the 16-week course, which culminated in graduation on December 17, 1999. Training covered such topics as Pennsylvania's Criminal and Vehicle Law, judicial system, constitutional law, crime scene management, police tactics, traffic stops, searches, mechanics of arrest, investigative techniques, firearms training, first aid, physical fitness and other law enforcement training. This training was designed to prepare new police officers for their careers in law enforcement, and lay the foundation for the cadets in their careers as waterways conservation officers.

Act 120 took place at the Pennsylvania State Police Southwest Training Center, near Greensburg, PA. The training was a challenge scholastically, physically and mentally. Several members of the class were in their thirties and forties and had not been students or on a fitness program for some time. With the encouragement of fellow classmates, everyone successfully completed the course. Members of the 15th WCO Cadet Class earned several awards for accomplishments during Act 120.

Although proud of the accomplishments that had already been made, every cadet was ready for a break before returning to the Fish & Boat Commission training. The cadets were then at the same training level as new police recruits.

Following a 45-day layoff, cadets were recalled to the H.R. Stackhouse School of Fisheries Conservation and Watercraft Safety on January 31, 2000. The vigorous, varied training program included Fish and Boat Law, aquatic ecology, basic boating instructor training, firearms training, unarmed self-defense, fishery management, pollution investigation, reptile and amphibian identification and various other technical and complex topics followed by weekly exams, which required many off-duty hours of study. WCO cadets must achieve a minimum passing score of 80 percent on each exam to become a WCO. Classroom training was occasionally mixed with field trips to places and activities such as the Raystown hydroelectric plant; a wetlands site; strip mine; deep mine; housing development sites for pollution and encroachment investigation; fly fishing; ice fishing; Bellefonte Fish Culture Station tour; sewage treatment facility; public speaking assignments; and small-boat, canoe and personal watercraft operations on the Juniata River.

The highlight of everyone's training had to be ice rescue. Ice rescue training involved cutting a 4-foot x 4-foot hole in the ice and putting on what we called the "Gumby suit." The Gumby suit is a cold-water survival suit, which helps insulate the body against the effects of cold water, such as hypothermia. Everyone had a chance to enter the frigid wa-

photo-WCO Joe Russell

Cadets practiced, and were tested in, unarmed self-defense. Cadets (inset photo) also honed their public speaking skills at a local elementary school.

ter more than once. The problem with ice rescue training was that the Gumby suits were not altogether waterproof.

With warmer weather on the horizon, the cadets could not wait for their first field training assignments. The first field training assignments started two weeks before the opening of trout season. Cadets were released from Stackhouse School and assigned to regions of the state for three weeks to work with experienced field-training officers. The field-training officers were selected for their excellence in doing their jobs as well as for their ability to teach new officers. The assignments lasted one week in each district and gave the cadets hands-on training in the duties of a waterways conservation officer as well as a perspective on the various regions located throughout Pennsylvania.

During field training, cadets were able to enforce fishing and boating laws and regulations, participate in stocking assignments and learn the day-to-day activities of a waterways conservation officer. After this three-week assignment, it was time to return to Stackhouse school for more classroom instruction to prepare for boating season field assignments.

The break between field assignments lasted four weeks and included a full week of instruction in boating-under-the-influence enforcement. This four-week training also included boat accident investigation, Pennsylvania Game and Wildlife Code and regulations, practical boat operations and handling, patrol boat operations, boat boarding, Fish and Boat Law, rules of criminal procedure review, map reading and orienteering, and firearms training. The cadets were then sent back to various regions for four weeks with the field-training officers to experience work conditions during the boating season.

By this time in the training, the cadets were beginning to feel the pressure of the training requirements and the difficult task of being separated from family and friends. The training director was trying to develop independence in the cadets to prepare them for their needed ability to work on their own in the field, but teamwork was still a factor in dealing with the separation from family members.

After the four-week training session with the field-training officers, it was back to the Stackhouse training school for a one-week session. Cadets were then assigned to their home regions for a nine-week assignment and a one-week return to school for classroom instruction on water rescue, hazardous materials, death notification, Spanish language for field officers, and review of Commission policy on conduct.

Cadets returned again to the Stackhouse training school for final instruction, review and preparation for an extensive final examination. The significant value of mixing hands-on field training with classroom training became apparent to the class at this time. This "mixing" allowed cadets to apply their recently received classroom training to actual field implementation, and then to return to class to resolve any questions that arose.

The cadets had one more major hurdle to overcome! The final examination consisted of a four-hour written exam and a day-and-a-half of practical skills performance examinations. The written exam was lengthy and technically challenging.

The training program culminated in a graduation ceremony held at the newly constructed headquarters building on Elmerton Avenue in Harrisburg on September 15, 2000.

Boating the Allegheny River's Pool 9

by Jeff Knapp

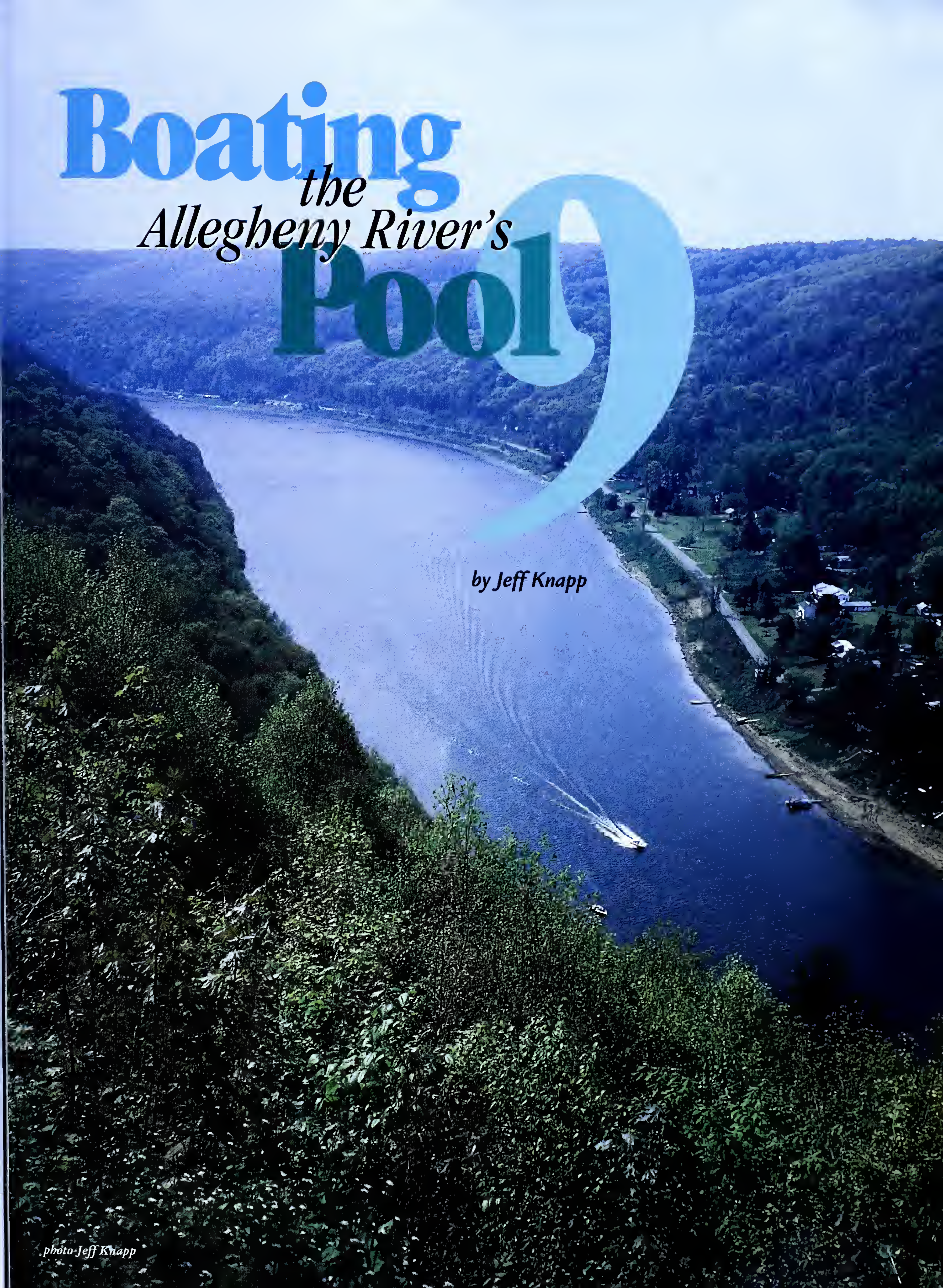


photo-Jeff Knapp

Transition. It's a word that often crops up when discussing outdoor activities. The bass angler is concerned about transitions that relate to fish location, influenced by such factors as food sources and spawning. But what about the recreational boater? Is transition a consideration?

Pool 9 of the Allegheny River provides a type of transition that is important to boaters. It marks the most upriver pool of the Allegheny, an area that provides boating opportunity for traditional prop-driven craft, as well as access to waters negotiable only by jet-driven or non-powered boats. And it does so in the steep-sided, wooded surroundings of the beautiful Allegheny River valley.

Lock & Dam 9 forms some nine miles of navigable backwaters. L&D 9 is located just upriver of the tiny hamlet of Rimer, on the eastern shore of the river. Like all eight navigational dams found on the Allegheny, L&D 9 is a fixed-crest design. This means the river spills over the concrete dam that spans the width of the river. There are no movable gates to allow for regulation of the upriver pool. The lock chamber is on the eastern side of the dam. A hydroelectric station has been incorporated in the western portion of the structure. Because it draws water that would otherwise flow over the dam, the hydroelectric plant influences the pool elevation, though this effect is minor.

A glance at the navigation charts produced by the U.S. Army Corps of Engineers shows that Lock & Dam 9 is located just upriver of mile marker 62. This means it's 62 miles upriver of "The Point" in Pittsburgh, where the Allegheny joins the Monongahela to form the Ohio River. The same charts indicate navigable water up to mile marker 72, though the water gets quite thin above mile 71.

The Clarion County town of East Brady serves as the center of activity for Pool 9. A "Riverfest," a festival that revolves around the recreation provided by the Allegheny, has taken place in recent summers. The Fish & Boat Commission maintains a fine access area, Brady's Bend Access, just up from the Route 68 bridge in East Brady on the west side of the river (Armstrong County). During the recreational boating season, a large dock is located at the access, and the ramp has two lanes. Unlike many river ramps, the one at Brady is quite level. Plenty of parking is available, though the access can be crowded during busy summer weekends.

The Allegheny serves as the Armstrong/Clarion County boundary above the mouth of Redbank Creek, with Armstrong to the west and Clarion to the east. Below Redbank, both banks of Pool 9 are in Armstrong County. Like much of the Allegheny, areas of Pool 9 are steeped in history. Bradys Bend is located here. It is named for Revolutionary War-era Captain Samuel Brady–and his battle with Indians in the late 1770s. At Bradys Bend, the river turns about three-quarters of a circle in a matter of a few miles.

Fish & Boat Commission Clarion County Waterways Conservation Officer Bob McClellan has patrolled this section of the Allegheny for the past four years. He sees Pool 9 as having plenty to offer local boaters and travelers.

"With the good access at East Brady, Pool 9 is ideal for the boater coming from out of the area," McClellan says. "And unlike some areas of the Allegheny, there's pretty good drive-to access to the many areas of the river's shoreline."

During his Clarion County stint, McClellan has had the opportunity to see how the pool provides recreation for a wide variety of boating types.

"The pool is open to bass tournaments, so we see a lot of traffic of that type," says McClellan. "The Butler area doesn't have any waters close by with unlimited horsepower. Lake Arthur, at Moraine State Park, has a 10hp limit. So we get plenty of boaters who travel up Route 68 from Butler."

The Pool 9 shoreline includes many riverside cottages, of which most have docks and boats. During a typical summer day, anglers, boaters and skiers use the waterway.

From a safety aspect, McClellan sees Pool 9 as relatively hazard-free.

"The channel's depth is maintained from bank to bank in much of the pool," says McClellan, "but boating traffic can be heavy on weekends. And you have to watch out for shallow bars located near the mouths of feeder creeks."

One such spot is located directly below Brady's Bend Access, where Sugar Creek comes in. A large bar washes out into the river in front of this stream. Boaters should use caution–swing toward the East Brady side of the river when passing Sugar Creek and navigating under the Route 68 bridge. Brady's Bend Access is located at mile 70. Navigable water is found only a short distance above this access point. When boating above the access, keep an eye on your sonar unit.

A trip to Pool 9 can be part of a boating-oriented vacation. Contact the following agencies for more information:

- *The Armstrong County Tourist Bureau, 402 East Market Street, Kittanning, PA 16201. Phone: 888-265-9954; web site: www.armstrongcounty.com; e-mail: armscopd@alltel.net.*

- *Northwest Pennsylvania Regional Visitors Bureau, 175 Main Street, Brookville, PA 15825. Phone: 800-348-9393; web site: www.magicforests.org; e-mail: magicforests@ncentral.com.*

photo-Jeff Knapp

McClellan notes that even though boating traffic can be heavy at times, for the most part boater behavior is good. He says folks are good about following the "rules of the road."

Personal watercraft and jet-driven flatbottoms aren't limited to the confines of the stillwater pool. McClellan says such craft commonly run up the river from East Brady to the West Monterey area. The excellent smallmouth bass fishing is one of the draws that pulls folks to the free-flowing waters.

The scenery is perhaps the most pleasant aspect of Pool 9. According to McClellan, the big river bends and bluff banks add to the boating experience, especially in the spring and fall. Much of my own experience on Pool 9 has taken place during October, when the combination of flaming hillsides and catching bass has proven ideal.

One of the more popular spots for boaters is the lower end of Redbank Creek. Redbank enters the Allegheny at mile 64, nearly two miles above Lock & Dam 9. The damming effect of Lock & Dam 9 can be felt nearly three-quarters of a mile up Redbank Creek, making it navigable for prop-driven boats. The channel is narrow (less than 200 feet wide), so Redbank Creek is a no-wake zone. This provides a quiet contrast to the more hectic playground found on the river proper, making it ideal for onboard lunches and just plain lounging around.

Why not take a trip to Pool 9 of the Allegheny next season? It can offer you a great time.

More Information on Pool 9

- "Locking through" can provide you with many more miles of boating adventure. Essentially, lock chambers are boxes built into the dams. Gates lead into the chamber from both the upriver and downriver side. When a boat locks through from the downriver side (heading upriver), the water level in the lock chamber is lowered to that of the pool below, via underwater gates. Once at that level, the downriver gate is opened and the boat is allowed to enter the lock chamber. After the gate is closed, the water level in the chamber is raised to that of the upriver pool. Then the upriver gate is opened and the craft can proceed upriver. When heading downriver, the operation takes place in reverse.

To lock through, a boater must have a 150-foot rope, and the boat should have bumpers to protect the hull from scraping the lock wall. Pull ropes located along the approach walls of the lock must be pulled to notify the lockmaster that you wish to lock through. Blinking lights similar to traffic lights indicate, via a green light, when it's okay to proceed into the lock.

Lock & Dam 9 has limited hours of operation. Check these hours and pay attention to your watch to ensure you don't become stranded in a pool other than the one from which you launched.

- Pool 9 provides not only excellent recreational boating opportunities. You'll find excellent fishing there, too. The pool is most noted for producing numbers of smallmouth bass. I concentrate my efforts along three distinct habitat types: Creek mouths, boulder shorelines and weedy flats.

The same rocky bars that pose navigation hazards at the mouths of streams provide good cover for smallmouth bass. The fish near these rocky bars respond well to grubs, tube jigs and topwater lures.

Shoreline areas that are lined with rocks and boulders also hold smallmouth bass. Try grubs and tube jigs.

During springs and summers of stable flows, growth of aquatic vegetation can be significant along shallow flats. Bass make good use of these areas. Seek out aggressive fish by running a buzzbait above this cover.

- A small library of maps and charts can prove valuable when making a trip to Pool 9. The Fish & Boat Commission's book *Guide to Public Fishing Waters and Boating Access* costs $2.83 and can be purchased with the publications order form in this issue. You can also order the Fishing & Boating Map. Contact the Commission at the address listed on the order form or at its web site: www.fish.state.pa.us.

For on-the-water guidance, purchase a book of Allegheny River navigation charts from the U.S. Army Corps of Engineers. Phone 412-644-6872 for the current price and availability, and ordering instructions.–*JK.*

PA's First Commissioner of Fisheries

In 1866, a convention was held in Harrisburg to investigate pollution, bad conditions in mountain lakes and streams, and the stopping of spring shad runs by dams. As a result, the General Assembly enacted, and Governor Andrew G. Curtin signed into law, the Act of March 30, 1866 (P.L. 370, No. 336), which created the position of Commissioner of Fisheries of the Commonwealth of Pennsylvania.

Governor Curtin named James J. Worrall (sometimes spelled "Worall") as Pennsylvania's first Commissioner of Fisheries. He served in the late 1860s.

As part of the Commission's efforts to explore its heritage as one of America's oldest fisheries conservation agencies, we are seeking more information about our first Commissioner of Fisheries, James J. Worrall. We are looking for biographical information and a portrait or photograph of Commissioner Worrall. We understood he served in the Union Army in the Civil War before becoming the Commissioner.

If you or anyone you know has information (family histories, genealogy or otherwise) about Jame Worrall, please contact the Commission at the following addresses: Executive Director, Pennsylvania Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000; E-mail: dguise@fish.state.pa.us.

Fishin' from the Kitchen

Pike Chowder

by Wayne Phillips

The best way to drive away winter chills is with a steaming bowl of pike chowder.

Ingredients for four servings:

- ☐ 1 pound boneless pike, cubed
- ☐ 4 to 6 slices smoked bacon, diced
- ☐ 1 onion, diced
- ☐ 1 red pepper, diced
- ☐ 2 potatoes, diced
- ☐ 1 cup kernel corn
- ☐ 4 to 6 cups of milk
- ☐ 1 Tbsp. fresh or 1 tsp. dried tarragon
- ☐ 4 bay leaves
- ☐ Pinch cayenne pepper
- ☐ Salt and pepper to taste
- ☐ Kneaded butter

photo-Wayne Phillips

Kneaded butter: This thickener is made with equal amounts of softened butter and flour creamed together. Use 3 Tbsp. each of butter and flour.

Procedure

Saute bacon, onions and red pepper in a stock pot. Add potatoes, tarragon, bay leaves and milk. Simmer until potatoes are just about done. Add corn, simmer 5 minutes more. Add cubed pike and cayenne pepper. Simmer 5 more minutes. Thicken soup with kneaded butter.

Serve

Serve in large soup bowls with plenty of crusty French-style bread. For color, garnish chowder with chopped fresh chives.

Hints

Using smoked bacon gives the chowder a wonderful smokiness that will remind diners of campfires. Diced red pepper adds some texture as well as color. Diced mushrooms, celery, carrots or squash can also be added to the chowder. Instead of thickening the chowder with kneaded butter, add a thick slice of bread to the bottom of the soup bowl and ladle the chowder over it. This is a typical European way of serving soup to make it more hearty.

Mike-based chowders

Milk-based chowders are perfect when made with fish because the milk does not overwhelm the delicate fish flavor. Adding some shrimp, clams or mussels brings new flavors to any fish chowder. Using several varieties of fish also makes for interesting chowders.

Notice to Subscribers

Act 1982-88 provides that certain records of the Pennsylvania Fish & Boat Commission are not public records for purposes of the Right-to-Know Law. This means that the Commission can place conditions on the release of such records. The Commission makes the subscriber list for *Pennsylvania Angler & Boater* available to statewide nonprofit, nonpartisan fishing, boating and sportsmen's organizations for nonprofit, noncommercial organizational purposes under limited circumstances.

If you do not want your name and address included on the subscriber mailing list to be made available to the described organizations, you must notify the Commission in writing before February 15, 2001. Send a postcard or letter stating, "Please exclude my name and address from *Pennsylvania Angler & Boater*'s subscriber mailing list." Send these notifications to Eleanor Mutch, *PA&B* Circulation, P.O. Box 67000, Harrisburg, PA 17106-7000, or e-mail your notification, including your name and address, to emutch@fish.state.pa.us.

Nicholas Mohney of DuBois (left) and Kent Sabatose of Brockway (right) shared co-champion honors in the 2000 Kids Ice Fishing Derby, held last February at Parker Lake, Parker Dam State Park, Clearfield County. The two anglers caught 5-pound rainbow trout that each measured just over 21 inches long. Pat Domico (center), derby coordinator, holds the trout. The 25th anniversary derby will be held February 3, 2001. For more details, contact derby coordinator Pat Domico at 814-765-9495.

photo-Rebecca Kolena

The mission of the Pennsylvania Fish & Boat Commission is to provide fishing and boating opportunities through the protection and management of aquatic resources.

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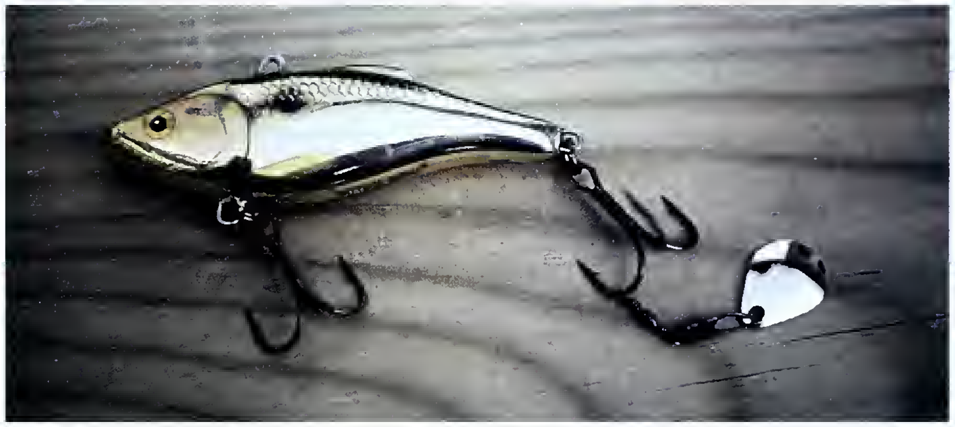
Angler's Notebook *by Jon Farley*



You can make a crankbait a little more attractive to fish with one simple modification. Take a small snap swivel and slide the round eye over the hook point and onto the bend of a crankbait's trailing treble hook. The swivel should be just big enough to fit over the barb, but not big enough to come back off too easily. Next, attach a small Colorado-style spinner blade to the swivel. The blade adds a little extra flash as you retrieve the lure.

Most ice fishing gear can be transported in a five-gallon bucket. Shovels are a different story, though. They have to be carried by hand, much to the inconvenience of ice anglers. To avoid this bother, use a dust pan to clear snow away from your holes instead of a cumbersome shovel. A compact dust pan fits nicely in a bucket or pack basket, and it can clear all but the deepest snowfalls.

Special disgorgers for removing small hooks from a fish's mouth are small, simple tools that often carry outlandish price tags at fishing shops. A less costly alternative is to use a "seam ripper." As its name implies, the tool is used in sewing to tear out unwanted seams from clothes, but it works just as well in removing small hooks from fish. A seam ripper can be purchased anywhere sewing supplies are sold.

Nowadays, the interiors of specialized bass boats are covered with all-weather carpet. Take advantage of this feature by putting pieces of self-adhesive hook-and-loop material on any items you want to "stay put" while fishing-things like drink holders, tackle boxes or rod tubes. The stiff bristles of the hook-and-loop material adhere nicely to the carpet, and they'll keep your essential gear in place.

Salmon eggs fished singly or in a clustered spawn sack are one of the best baits for steelhead. To make them even more enticing, tie a piece of brightly colored yarn to the hook shank, just above the bait. This makes the bait more visible to steelhead and often yields better results with the notoriously picky fish. The tactic is especially helpful when murky water limits visibility.

photo-Jon Farley

Notes from the Streams

Caught the same fish

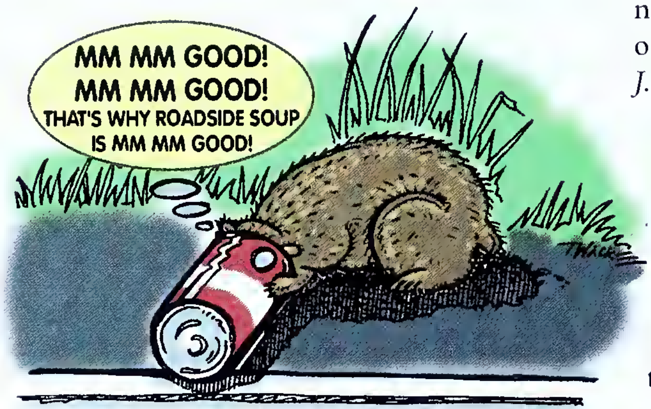
Eight o'clock had come and gone, and I was the most ignored person on Stony Creek, deep in the heart of Norristown Borough. I walked along and heard loud voices. They did not sound like happy sounds, so I investigated. As I approached the voices, I noticed a large trout dancing on its tail in the middle of the creek. On opposite sides of the creek came the sounds of "It's mine!" As I approached, one of the anglers agreed to have the other pull this very talented trout into shore. He then put down his rod and walked across the stream. Now both anglers were holding the trout with one hand, peeking in its mouth, and pushing each other around. They apparently had caught the same fish. How they did so is anyone's guess. I stopped the argument, took possession of the talented trout and told the gentlemen to decide now who gets the fish, or it swims. One angler gave in, they promised to be good, and we all shook hands.–*DWCO Fran Lauderback, Southern Montgomery County.*

Other side of the fence

It's not uncommon sometimes for people to lose perspective. However, one day while on patrol I met a gentleman who could set things straight. This angler was fishing the Schuylkill River near Gladwyne. He spoke with an accent and told me he was born and raised in England. He took the time to explain that in his home country, fishing is a rich man's sport. Fees must be paid to gain access to streams, and more fees are required to keep fish. He was overjoyed that he could pay a small cost for a license and fish year-round. I wonder if those people who complain about the cost of a license know just how good they have it?–*WCO Gerald B. Barton, Southern Montgomery County.*

Hungry groundhog?

On routine patrol the night before the opening day of the trout season, DWCO Mike Strohl and I headed to Lizard Creek. We took a shortcut to the stream, which took us along some farm roads, where we passed an object in the road. At first glance it looked like a stuffed animal with something on its head. On further investigation (we backed up for a closer look), it turned out to be a live groundhog with a soup can completely covering its head. We pulled to the side of the road for a closer look. After observing this animal for a few minutes trying to remove the can in vain, we decided we had to do something or the groundhog would starve to death or get hit by a car. I put on a pair of gloves, picked up the groundhog and carried it to the side of the road. Mike held the groundhog while I tried to get the can off. It seemed the harder I tried, the tighter it got. And Mr. Groundhog was not happy with us or the can on its head. Finally, I tried pulling the can while pushing on the sides to expand it, because the can looked like it was crimped in the middle around its neck. First one ear appeared, then the other, and finally, *pop*, he was free. Mike and I backed away for a moment as the groundhog tried to figure out what had just happened to him. Mike then carried the dazed but otherwise unharmed animal into the field away from the road, and we continued on our way. How the can got there, who knows! I guess his head was bigger than his stomach!–*DWCO Howard Morana, Carbon County.*


MM MM GOOD!
MM MM GOOD!
THAT'S WHY ROADSIDE SOUP IS MM MM GOOD!
TWACK

Beginner's luck

On my first day of field training as a member of the 15th Waterways Conservation Officer Class, I encountered a situation only minutes after joining up with my FTO (field training officer). We had traveled only a few miles when we spotted a pickup truck parked on a trail closed to vehicular traffic. After we pulled in behind the truck, two men ascended the stream bank from a small tributary that runs adjacent to the trail. One of the men was carrying a white styrofoam minnow bucket that contained some 30 minnows. During our questioning of the two individuals, one of them admitted to trapping the minnows from the tributary in preparation for the upcoming trout season. After explaining that you are required to have a fishing license to do that, and after his stating that he did not have one, I issued the first citation of my career. It never hurts to have a little bit of luck on your side sometimes.–*Cadet Thomas J. Crist, 15th WCO Class.*

To arrest or not to arrest

While practicing vehicle operations with a boat trailer in the parking lot of the Stackhouse Training School, my classmates and I observed two fishermen trying their luck on Spring Creek. The school is located directly in front of the creek's Heritage Angling waters and offers a terrific view of the water as well as the dyed-in-the-wool fly fishermen who frequent this waterway. The curious thing about these fishermen was their equipment and method of fishing. Spinning reels, artificial lures and wading in the water is prohibited in this special-regulation area, and these two "sportsmen" were having a blast violating the rules right in front of 15 uniformed officers! Needless to say, we were eager to get to the bottom of it and had planned to take swift action. In the midst of issuing citations to these would-be violators, we realized that they were Commission officers employed by our supervisor to test our newly acquired enforcement skills. We learned much from our training officer's trickery, but I still think we should have given a ticket to someone. I wonder if "sneakiness" is against the law.–*Cadet Jonathan R. Kay, 15th WCO Class.*

Dispelling a myth

Training at the H.R. Stackhouse School of Fisheries Conservation and Watercraft Safety consisted of trout stocking 101. Having heard horror stories of chaos as the masses followed the stocking trucks, I mentally prepared myself. The volumes of greedy, selfish people would certainly fill this day with heartache and disappointment. After arriving at the stocking point, I searched out the district WCO. Hidden by a group of people, he answered various questions. He appeared very busy, but alert to my presence. I managed to introduce myself between various inquiries.

Shortly thereafter, he gathered everyone and introduced himself. He stated his objectives, requested that all be safe, and then, surprisingly, introduced me. I was then flooded with a barrage of hellos, welcomes and handshakes. Everyone seemed genuinely interested. The day passed, all fish were stocked, and on the drive home I thought about the day. Where were the greedy and selfish people, and where was the chaos? Instead, I witnessed one of the greatest traditions of all time. I saw many great things, but greatest of all is where I would be without them. I know all days cannot be like this one, but after today, I look for these kinds of days.–*Cadet Joshua Roland, 15th WCO Class.*

Love of the sport

Many anglers profess their love of the sport, but last November I met one of the most ardent sportsmen. This Erie resident parked at the upper lot at the Elk Creek Access and walked to the creek mouth through three feet of freshly fallen lake-effect snow. Once there, he caught and released more than 20 steelhead in a matter of hours. While crossing a sandbar that had formed at the mouth, he slipped and was carried by the current 100 yards into the cold Lake Erie water. As his head went underwater, he thought, "My life is over, but at least I had a good day of fishing." Eventually he surfaced and swam to a floating tree limb, to which he hung on precariously for an hour in the 50-degree water. Rescuers from the Lake City Fire Company reached him about an hour later and were surprised when he handed them his fishing rod first. The victim said, "That rod is my baby...and there ain't no way I'm losing that." After the rescue, I met with the victim and his wife to review the incident. He was going back to the same spot to go fishing. His wife said, "My husband is not a well man. He didn't have to worry about the cold water numbing his brain. It was numb before he ever fell in!" –*WCO John W. Bowser, Erie County.*

Tribute to Dad, alias "River Rat Ray"

This is a tribute to my Dad, Raymond L. Nace, or as we affectionately referred to him, "River Rat Ray." Dad passed away last January. He will always be remembered as a great husband, father and grandpa. He was also an avid boater, fisherman and hunter. One of his favorite places was the Susquehanna River in Harrisburg. Every time the grandkids pass the Susquehanna, they yell, "There's Pap Pap's River!" He boated there for over 50 years and knew where every rock stood–and hit a lot of them, too.

Fishing was his favorite pastime. I still get blamed for messing up the 1962 trout season when I was born on the opening day. Dad loved to fish, especially with his Dad years ago. Nothing tasted better to him than the native brook trout he used to catch. He knew all the good fishing holes from here to Potter County–never let us know exactly where. All good fishermen keep such secrets.

Dad was always tinkering with his boats. He developed his own prop guard that many boaters admired. He even put a steering wheel on his fishing boat so it would drive better, and he installed a table umbrella on his runabout to keep him out of the sun. He was always proud of his latest boat customization.

His family will miss his fishing and hunting stories. They were like a good wine that got better with age. The fish got bigger and the hunting more challenging.

He was one of the few remaining true hardcore anglers, a special breed, a World War II veteran and a friend to all. He was always the type willing to lend a fellow sportsman a hand. His family will miss him greatly and so will you. Even though you don't know him, if he was out on the water and you needed help, he was there. He was a quiet hero on the river. He rescued countless people and retrieved many belongings of those who were in trouble. He towed people in, fixed their engines, retrieved items from capsizes, and even saved a life or two. Sometimes he was thanked and sometimes he wasn't, but it didn't matter. He was just glad to help.

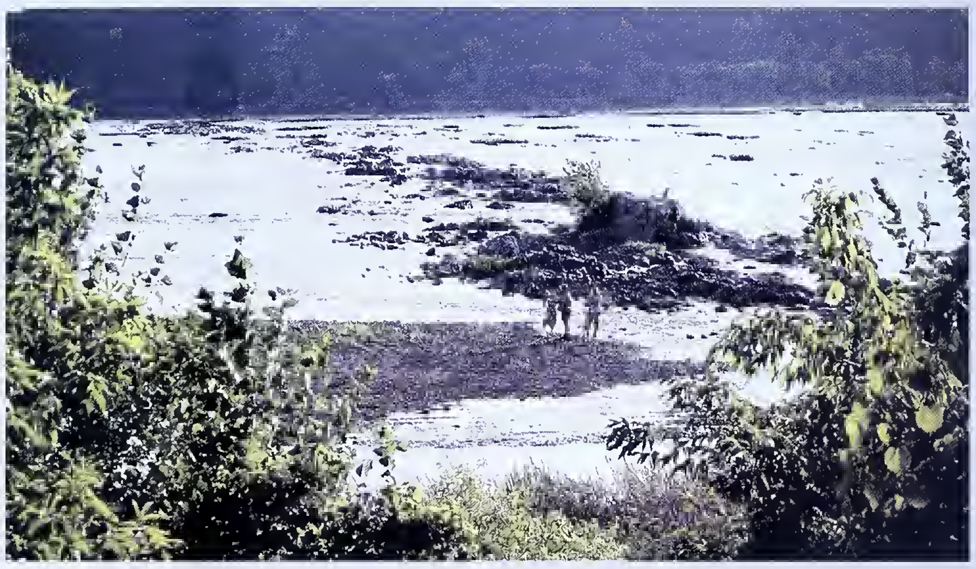
He was all these things and more. I'll miss him, his stories, and the sparkle in his eyes when he was with his grandchildren. I like to think he's now fishing in the best spot there is.

Don't worry, Dad–your children will keep the home fires burning and take good care of Mom. You just enjoy the fishing with Grandpa until we meet again. We will always love you.–*Linda Corage, Bureau of Boating & Education.*

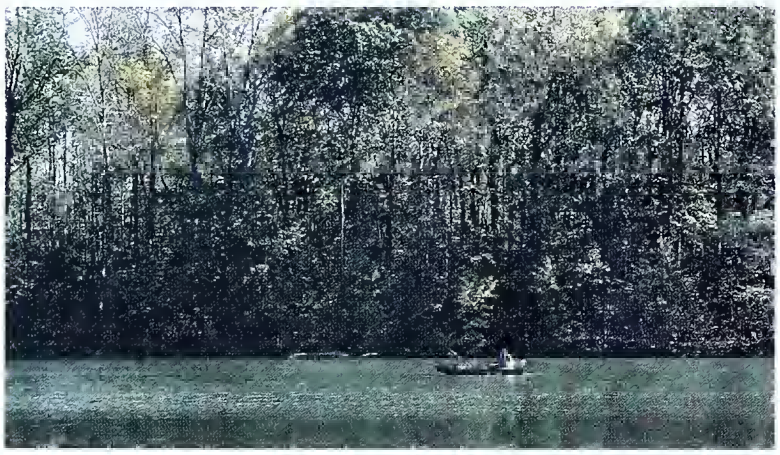
Photo Contest Tips

by Art Michaels

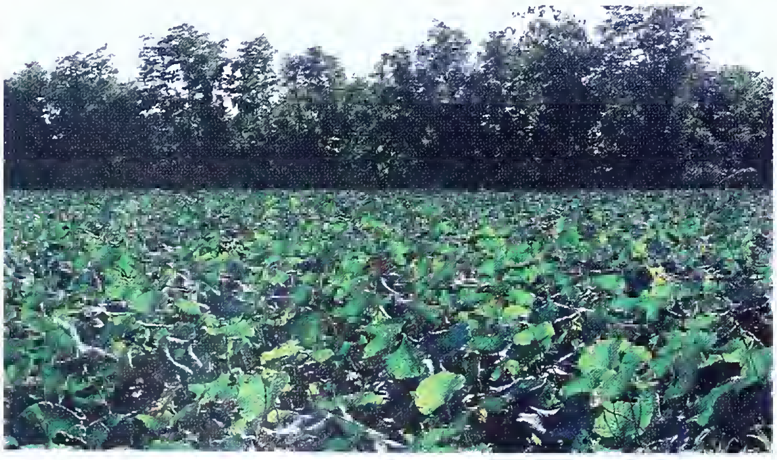
Check the details of the Commission's Photography Contest on page 63! Use these ideas, the final installment in our series, to take some great fishing, boating and waterway photos! HURRY! The Commission's photo contest ends December 1, 2000, so take your best shot and enter today! For more photo ideas, see the photo tips in previous year 2000 issues.



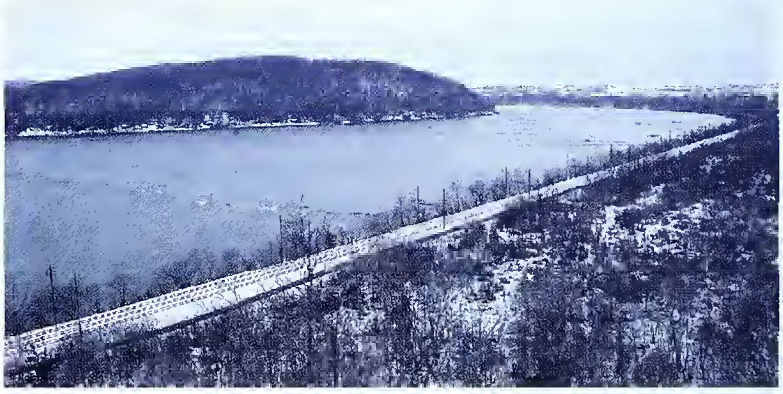
HIGH HORIZON LINE
A high horizon line, or implied high horizon line, accents a photograph's depth perspective and "3-D" quality. **Exposure:** Kodachrome 64 about $^1/_{125}$-second at f/8.



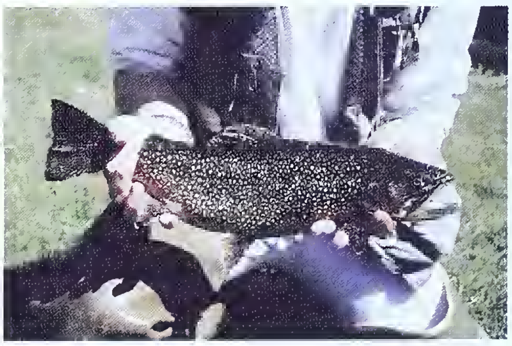
LOW HORIZON LINE
A low horizon line, or implied low horizon line, accents a photograph's height perspective. **Exposure:** Kodachrome 64, about $^1/_{500}$-second at f/4.



LOW SUN ANGLE
To increase the dramatic effect of a picture, shoot an outdoor scene with a low sun angle, generally morning or evening, and try for sidelighting or backlighting. **Exposure:** Fuji Provia 100F, about $^1/_{30}$-second at f/16.



WINTRY SCENES
Snow can fool camera exposure meters into producing pictures that are too dark–with snow appearing blue or gray. If you can adjust exposure on your camera, try increasing the exposure of a snow scene by one or two f/stops. This adjustment brightens the picture and renders whiter snow. **Exposure:** Fuji Provia 100, about $^1/_{125}$-second at f/5.6.



REFINED EXPOSURE
For tricky shots with very light areas and very dark areas, isolate and expose for the subject (the trout, in this picture). Some cameras have a built-in spot meter. Use it to separate the subject's exposure from that of other picture elements. Some automatic point-and-shoot cameras have an exposure lock that lets you expose for a portion of the picture and then re-compose the shot. In this picture, I let the background lighten a little more than usual in favor of getting a more saturated exposure of the fish. **Exposure:** Fuji Provia 100, about $^1/_{125}$-second at f/11.

photos-Art Michaels

HURRY! CONTEST ENDS DECEMBER 1, 2000!

Year 2000 PFBC Photography Contest

photo-Ted Walke

PICTURE THIS! Your photograph in *Pennsylvania Angler & Boater* Magazine, in Commission publications, on the Commission's web site, and on Commission exhibits!

The Year 2000 Pennsylvania Fish & Boat Commission Photography Contest is intended to foster a greater appreciation for Pennsylvania's fishing and boating, and aquatic resources.

Contest winners will be determined by a panel of judges chosen by the PA Fish & Boat Commission. Photographs will be rated on qualities including composition, originality, visual appeal and adherence to contest rules. First-, second- and third-place winners, and honorable mention winners, may be selected in each category.

Contest winners and honorable mention winners will receive a certificate. Winners will also receive a large-size (6-inch diameter) 10th Anniversary Trout Stamp patch. Honorable Mention winners will receive a year 2000 Trout Stamp patch. Winning entries and honorable mentions may appear in a contest feature article in a future issue of *Pennsylvania Angler & Boater*. All entries may also be used elsewhere in the magazine, on the magazine's cover, in Commission publications, on the Commission's web site, and in Commission exhibits.

The contest will run from January 1, 2000, through December 1, 2000. Winners are scheduled to be announced during an awards presentation at the January 2001 Commission meeting.

Rules

- The contest is open to amateur photographers (anyone who makes less than half one's annual income from taking and/or selling photographs).
- Entries must be original works taken in Pennsylvania, and they must have been taken by the person entering the contest.
- Entries must also show adherence to Pennsylvania fishing and boating laws and regulations.
- In photographs all boaters, and anglers in boats, must be wearing properly fitted, buttoned and zipped life jackets.
- Entrants may submit only mounted 35mm color slides, color prints in sizes 3 $^{1}/_{2}$"x5", 4"x6", 5"x7", or 8"x10", or unmounted medium-format and large-format transparencies.
- All submissions must be in color–no black-and-white photos.
- All submissions must be original–no duplicate slides or electronic submissions.
- No mounted, over-matted, framed or glassed prints will be accepted.
- Retouched or electronically manipulated entries are not allowed.
- Please do not send negatives.
- Each photo must include the entrant's name, address, phone number, location of the photograph, and category, in addition to a fully completed official entry form on this page for each category entered.
- Participants are limited to a total of two entries per category. Multiple submissions are allowed, as long as entrants submit no more than two items per category.
- The Pennsylvania Fish & Boat Commission shall have the right to use all submissions for publishing, illustration, World Wide Web display, advertising, trade, exhibitry and promotion, or any other use in any medium for any purpose without compensation.

Entrants who want their materials returned must include a self-addressed, stamped envelope with the right amount of postage and appropriate packaging to safeguard materials. Submissions that do not include return envelopes and postage will not be returned.

Photo Contest Entry Form

www.fish.state.pa.us

Complete this form with each entry and mail to: PFBC Photo Contest, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000. The deadline for the Commission's receiving entries is December 1, 2000.

Entrant's Name: ______________________

Address: ______________________

City: ____________ State: ______ Zip: ______

Phone: ______________________

E-mail (if available): ______________________

Date: ______________________

Signature: ______________________

Categories

☐ 1. Seasonal Fishing and/or Boating
☐ 2. Family Fishing and/or Boating
☐ 3. Reptiles and Amphibians (Animal closeups, or photos with the animals as the primary subject)
☐ 4. Invertebrates (worms, aquatic insects, crustaceans, mussels)
☐ 5. Fishing & Boating Resources (primarily waterway scenic emphasis)

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